

Health and Safety Plan for the Removal and Detonation of Unexploded Ordnance at the INEEL

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October 2002*



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**Idaho National Engineering and Environmental Laboratory
Environmental Restoration Program
Idaho Falls, Idaho 83415**


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Health and Safety Plan for the Removal and Detonation of Unexploded Ordnance at the INEEL

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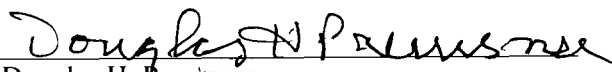
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ABSTRACT

This health and safety plan (HASP) establishes the procedures and requirements that will be used to eliminate or minimize health and safety risks to personnel working on unexploded ordnance removal and detonation projects at the INEEL, as required by the Occupational Safety and Health Administration (OSHA) standard “Hazardous Waste Operations and Emergency Response (HAZWOPER)” (29 CFR 1910.120). This HASP contains information about the hazards involved in performing the work as well as the specific actions and equipment that will be used to protect personnel while working at the task site.

This HASP is intended to give safety and health professionals the flexibility to establish and modify site safety and health procedures throughout the entire span of site operations based on the existing and anticipated hazards.

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ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
ALARA	as low as reasonably achievable
ANSI	American National Standards Institute
Anti-C	anti-contamination
ARDC	Administrative Record and Document Control
BBWI	Bechtel BWXT Idaho, LLC
CERCLA	Comprehensive Environmental, Response, Compensation and Liability Act
CFA	Central Facilities Area
CFR	Code of Federal Regulations
CWA	controlled work areas
DAR	document action request
dBA	decibel A-weighted
DMCS	Document Management Control System
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
DOT	U.S. Department of Transportation
DWA	designated work areas
EAM	emergency action manager
EC	emergency coordinator
EDF	engineering design file
EOD	explosive ordnance disposal
EPA	U.S. Environmental Protection Agency
ER	environmental restoration
ERO	Emergency Response Organization
ES&H	environment, safety, and health

FTL	field team leader
GDE	guide
GPS	global positioning system
HASP	health and safety plan
HAZMAT	hazardous material
HAZWOPER	hazardous waste operations and emergency response
HEPA	high-efficiency particulate air
HSO	health and safety officer
IDEQ	Idaho Department of Environmental Quality
IDLH	immediately dangerous to life or health
IH	industrial hygienist
INEEL	Idaho National Engineering and Environmental Laboratory
ISMS	Integrated Safety Management System
JSA	job safety analysis
MCP	management control procedure
MDA	mass detonation area
NIOSH	National Institute of Occupational Safety and Health
NODA	Naval Ordnance Disposal Area
NPG	Naval Proving Grounds
OE	ordnance explosive
OMP	Occupational Medical Program
OSHA	Occupational Safety and Health Administration
PEL	permissible exposure limit
PEP	project execution plan
PLN	plan
PMP	program management plan

POD	plan of the day
PPE	personal protective equipment
PRD	program requirements document
RadCon	Radiological Control
RCT	radiological control technician
RCRA	Resource Conservation and Recovery Act
ROD	record of decision
RWP	radiological work permit
SAD	site area director
SH&QA	safety, health, and quality assurance
SME	subject matter expert
SWP	safe work permit
TLV	threshold-limit value
TPR	technical procedure
TRAIN	Training Records and Information Network
TWA	time-weighted average
UV	ultraviolet light
UXO	unexploded ordnance
VPP	Voluntary Protection Program
WAG	waste area group
WCC	Warning Communications Center
WO	work order

Health and Safety Plan for the Removal and Detonation of Unexploded Ordnance at the INEEL

1. INTRODUCTION

1.1 Purpose

This health and safety plan (HASP) establishes the procedures and requirements that will be used to eliminate or minimize health and safety hazards to personnel working on unexploded ordnance (UXO) removal and detonation projects at the Idaho National Engineering and Environmental Laboratory (INEEL).

1.2 Scope and Objectives

This HASP has been written to meet the requirements of the Occupational Safety and Health Administration (OSHA) standard, “Hazardous Waste Operations and Emergency Response (HAZWOPER)” (29 Code of Federal Regulation [CFR] 1910.120). This HASP governs all work at the project sites that is performed by INEEL management and operations contractor personnel, subcontractors, and any other personnel who enter the project area.

This HASP has been reviewed and revised, as deemed appropriate, by the health and safety officer (HSO) in conjunction with other project personnel and management to ensure its effectiveness and suitability.

1.3 Idaho National Engineering and Environmental Laboratory Site Description

The INEEL, formerly the National Reactor Testing Station, encompasses 569,135 acres (889 mi²), and is located approximately 55 km (34 mi) west of Idaho Falls, Idaho (Figure 1-1). The U.S. Department of Energy Idaho Operations Office (DOE-ID) has responsibility for the INEEL and designates authority to operate the INEEL to government management and operating contractors.

The United States Atomic Energy Commission, now the U.S. Department of Energy (DOE), established the National Reactor Testing Station (now the INEEL) in 1949, as a site for building and testing a variety of nuclear facilities. The INEEL has also been the storage facility for transuranic radionuclides and radioactive low-level waste since 1952. At present, the INEEL supports the engineering and operations efforts of DOE and other federal agencies in areas of nuclear safety research, reactor development, reactor operations and training, nuclear defense materials production, waste management technology development, energy technology and conservation programs, and DOE long-term stewardship programs.

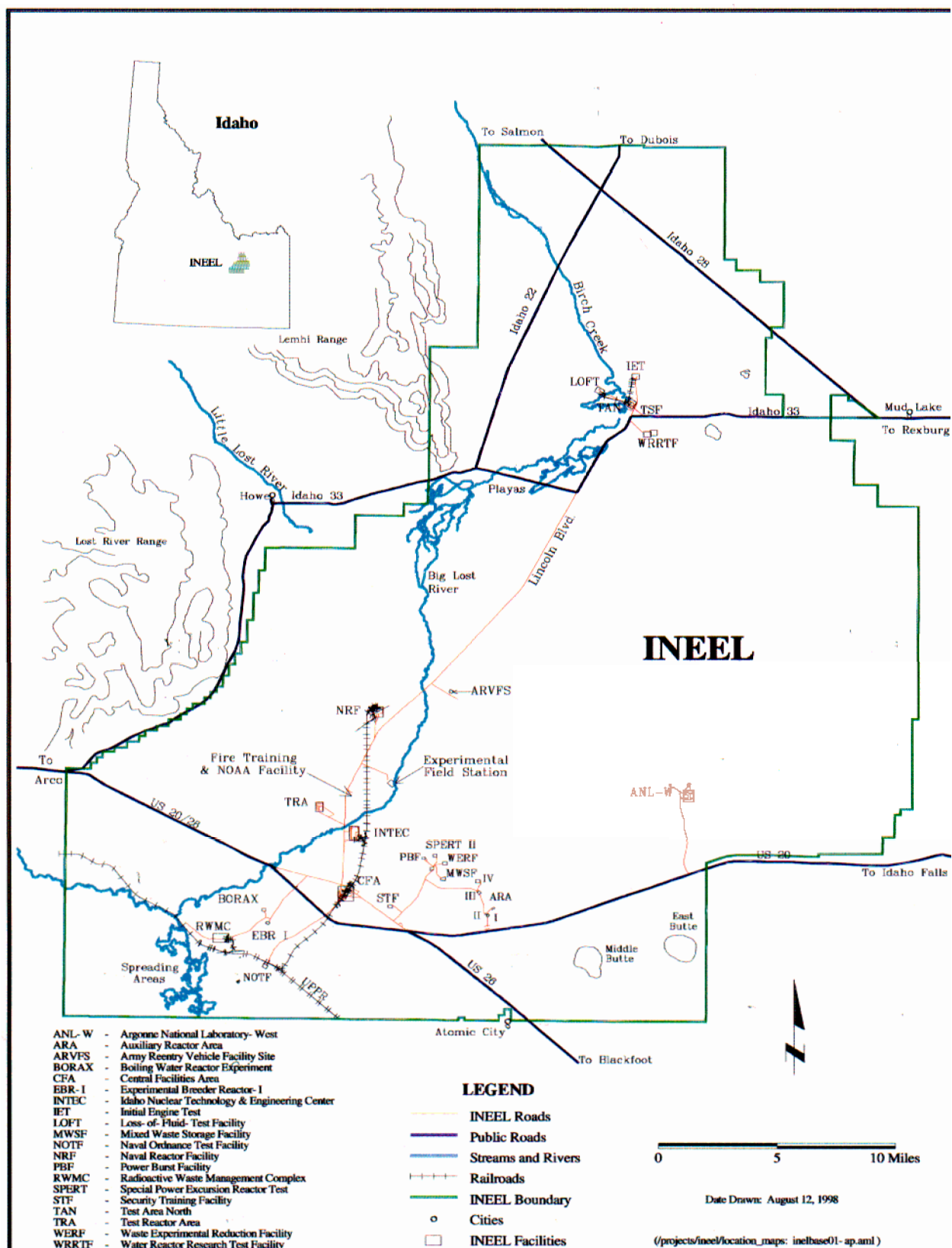


Figure 1-1. Map of the INEEL showing locations of major facilities.

1.4 Background and Project Site Description

Within the INEEL boundary is an area of approximately 699 km² (270 mi²) that was formerly known as the Naval Proving Grounds (NPG). The NPG was established to proof-test guns manufactured, repaired, and assembled at the Naval Ordnance Plant in Pocatello, Idaho. Between 1942 and 1949, approximately 1,650 minor (3 to 5-in.) and major (8 to 16-in.) guns were proofed at the NPG.

Additional work conducted at the NPG included experimental and test work, primarily in mass explosions conducted by the Army/Navy Explosives Safety Board, the U.S. Navy Bureau of Ordnance, and the U.S. Army Safety and Security Division, Ordnance Department. During these tests, hundreds of thousands of kilograms of explosives in projectiles, land mines, smokeless powder, and bombs were placed in explosives storage bunkers and detonated to determine the effects on other storage bunkers and facilities.

Portions of the NPG and areas near the NPG also served as bombing ranges for Army Air Corps aircraft flying from Boise and Pocatello. Portions of 100- to 2000-lb bombs have been found in some areas of the INEEL.

As a result of the NPG activities, some areas of the INEEL contain UXO and ordnance explosive (OE) (see Figure 1-2). Despite several removal actions in recent years, UXO can still be found in areas throughout the INEEL. These ordnance sites are a potential safety hazard to site field personnel. They also present a security risk of deliberate detonation. As these areas are discovered, removal and detonation of the UXO may be performed to remove these safety and security risks.

1.5 Scope of Work

This HASP covers the removal, transportation, and destruction/detonation of UXO collected from areas within the INEEL. In some cases, it may be necessary for the UXO to be blown in-place. All ordnance and live projectiles identified shall be removed (if determined safe to do so), transported to the Mass Detonation Area (MDA), and destroyed, or, if necessary, blown in-place. The location of the MDA is shown in Figure 1-2. Typically, each ordnance is surveyed using Global Positioning System (GPS) instruments prior to removal or detonation in-place.

The scope of this HASP assumes the UXO can be removed by hand or detonated in place. Hand removal may include the use of shovels or other hand tools to remove UXO. This HASP does not cover large-scale UXO removal activities that require the use of heavy equipment to either excavate or lift UXO. This HASP also does not cover remediation of ordnance explosive (OE)-contaminated soils.

The Bechtel BWXT Idaho, LLC (BBWI) explosive ordnance disposal (EOD) qualified HSO will examine each item prior to its transport. If the BBWI EOD qualified HSO determines that the UXO can be safely handled and transported, it will be transported to the blast site for detonation. If the BBWI EOD qualified HSO determines that the projectile (or other items) cannot be safely transported, the UXO will be detonated in place.

The MDA is a blast area east of Lincoln Boulevard at mile marker 8 that has been cleared for EOD. A large crater at the area is used to countercharge UXO and OE, and a reinforced concrete bunker is available for personnel protection. After countercharging, the blast area will be inspected for shrapnel and complete detonation of explosive materials. Explosive material released due to incomplete detonation will be countercharged again. Non-hazardous solid waste, such as shrapnel or inert rounds, will be disposed of at the Central Facilities Area (CFA) landfill or recycled. Inert rounds will be demilitarized prior to release for disposal or recycling.

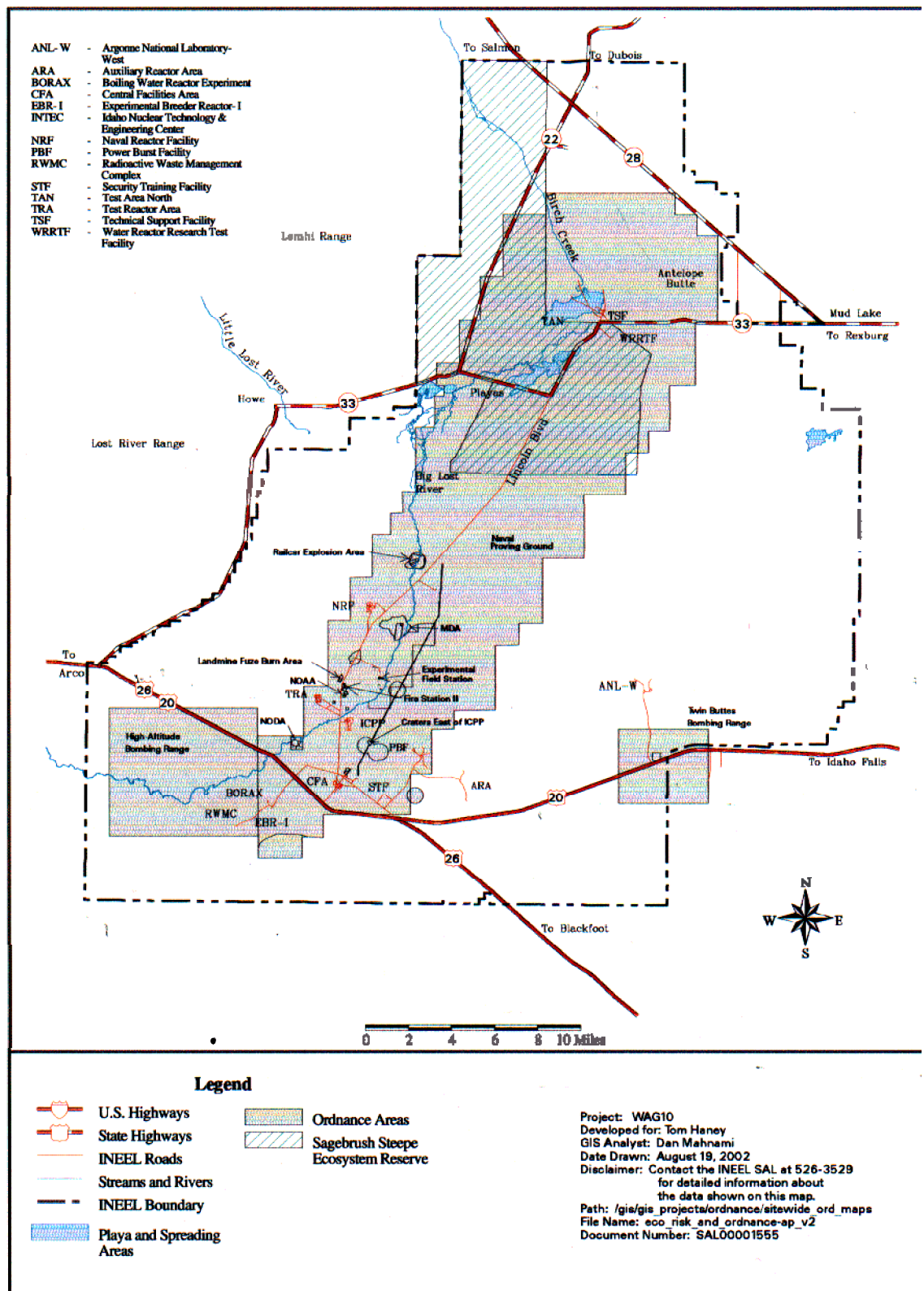


Figure 1-2. Locations of UXO Areas at the INEEL including NODA and MDA.

The work will require military-trained EOD technicians and supervisors and may utilize standard EOD equipment such as magnetometers, hand excavation equipment (e.g. shovels, trowels), countercharging explosives and initiating equipment, and approved explosive storage facilities.

2. HAZARD IDENTIFICATION AND MITIGATION

The overall objective of this section is to identify existing and anticipated hazards based on the project scope of work and to provide controls to eliminate or mitigate these hazards. These include the following:

- Evaluation of each project task to determine the safety hazards, radiological, chemical, and biological exposure potential to project personnel by all routes of entry
- Establishment of the necessary monitoring and sampling required to evaluate exposure and contamination levels, determine action levels to prevent exposures, and provide specific actions to be followed if action levels are reached
- Determination of necessary engineering controls, isolation methods, administrative controls, work practices, and (where these measures will not adequately control hazards) personal protective equipment (PPE) to further protect project personnel from hazards.

The purpose of this hazard identification section is to lead the user to an understanding of the occupational safety and health hazards associated with project tasks. This will enable project management and safety and health professionals to make effective and efficient decisions related to the equipment, processes, procedures, and the allocation of resources to protect the safety and health of project personnel.

The magnitude of danger, presented by these hazards to personnel entering work zones, is dependent on both the nature of tasks being performed and the proximity of personnel to the hazards. Engineering controls will be implemented (whenever possible) along with administrative controls, work practices, and PPE to further mitigate potential exposures and hazards. This section describes the chemical, safety, and environmental hazards that personnel may encounter while conducting project tasks. Radioactive contamination at the sites is not expected. Hazard mitigation provided in this section in combination with other work controls (e.g., technical procedures (TPR), work orders (WO), job safety analyses (JSA), and Guide [GDE]-6212, “Hazard Mitigation Guide for Integrated Work Control Process”) also will be used where applicable to eliminate or mitigate project hazards.

All activities will be performed using currently accepted practices and standard operating procedures, including, but not limited to, the following:

- DOE M 440.1-1, “DOE Explosives Safety Manual”
- PLN-320, “Transportation Plan for the Shipment of Explosives Material Within the Boundaries of the INEEL”
- PLN-1043, “Implementation Plan for Movement of Explosive Materials Within the Boundaries of the INEEL”
- “Safety Concepts and Basic Considerations Unexploded Ordnance,” Army Corps of Engineers
- Explosive Ordnance Disposal Procedures, Joint Service Publications (U.S. Military “60 Series Publications”)
- Technical Order 11A-1-42, “General Instructions for Disposal of Conventional Munitions,” US Air Force.

- The requirements listed in 29 CFR 1926 Subpart U – Blasting and the Use of Explosives, will be followed as applicable.

Note: Depending on the area in which UXO is found, additional governing documents may apply to a specific removal project (e.g. HASP that applies to CERCLA areas outside INTEC where UXO is found).

2.1 Chemical Hazards and Mitigation

Ordnance explosives and their detonation by-products introduce chemical hazards on UXO removal and detonation projects. However, there is minimal potential for exposure to these chemical hazards during project tasks if the standard operating procedures and technical requirements mentioned above are followed. Table 2-1 lists the applicable exposure limits and brief toxicological information for each of the potential chemical hazards involved.

Safe work permits (SWPs) and radiological work permits (RWPs) may be used in conjunction with this HASP to address specific hazardous operations (e.g., hot work) and radiological conditions at the project site. If used, these permits will further detail specialized PPE and dosimetry requirements.

2.2 Safety and Physical Hazards and Mitigation

Industrial safety and physical hazards will be encountered while performing tasks at the project site. Section 4.2 provides general safe-work practices that must be followed at all times. The following sections describe specific industrial safety hazards and procedures to be followed to eliminate or minimize potential hazards to project personnel.

2.2.1 Transportation of Explosive Materials

The BBWI EOD qualified HSO will examine each UXO item prior to its transport. If the BBWI EOD qualified HSO determines that the UXO can be safely handled and transported, it will be transported to the blast site for detonation. If the BBWI EOD qualified HSO determines that the projectile (or other items) cannot be safely transported, the UXO will be detonated in place. All UXO will be transported following the regulations listed in Section 2 above.

Demolition explosives (initiating explosives) will be transported from the CFA 609 magazines to the MDA. These explosives will be transported in accordance with PLN-320, “Transportation Plan for the Shipment of Explosives Material Within the Boundaries of the INEEL”. The transportation route will be from the CFA 609 magazines, down Lincoln Blvd., to the MDA. Demolition explosives will be transported in the afternoon after the UXO have been transported to the detonation pit. No ordnance or explosives will be left at the detonation pit overnight. All demolition explosives transported to the demolition pit will be detonated; no explosives will be returned to the CFA 609 magazines. After the explosives have been unloaded from the explosive transportation truck, the truck will be removed from the area and parked behind the detonation site firing bunker.

2.2.2 Material Handling and Back Strain

Material handling and maneuvering of various pieces of equipment may result in employee injury. All lifting and material-handling tasks will be performed in accordance with Management Control Procedure (MCP) -2692, “Preventing Ergonomic and Back Disorders.” Personnel will not physically lift objects weighing more than 50 lbs. or 1/3 their body weight (whichever is less) alone. Additionally, back strain and ergonomic considerations must be given to material handling and equipment usage. Mechanical

and hydraulic lifting devices should be used to move large or heavy materials whenever possible. The industrial hygienist may conduct ergonomic evaluations of various project tasks to determine the potential ergonomic hazards and provide recommendations to mitigate these hazards. Applicable requirements from MCP-2739, “Material Handling, Storage, and Disposal,” also will be followed.

2.2.3 Repetitive Motion and Musculoskeletal Disorders

Tasks to be conducted may expose personnel to repetitive-motion hazards, undue physical stress, overexertion, awkward postures, or other ergonomic risk factors that may lead to musculoskeletal disorders. Musculoskeletal disorders can cause a number of conditions including pain, numbness, tingling, stiff joints, difficulty moving, muscle loss, and sometimes paralysis. The assigned project industrial hygienist will evaluate project tasks and provide recommendations to reduce the potential for musculoskeletal disorders in accordance with MCP-2692.

2.2.4 Working and Walking Surfaces

Slippery or uneven work surfaces can increase the likelihood of back injuries, overexertion injuries, slips, and falls. The ordnance sites are located in the field and may present inherent tripping hazards such as uneven ground, vegetation, or debris. Tripping and slip hazards will be evaluated during the course of the project in accordance with Program Requirements Document (PRD)-5103, “Walking and Working Surfaces.”

Table 2-1. Evaluation of health-based contaminants of concern.

Exposure Limit ^a (Permissible Exposure Limit and Threshold Limit Value)		Routes of Exposure	Symptoms of Overexposure (Acute and Chronic)	Target Organs and System	Carcinogen? (Source) ^b	Matrix or Source at Project Site
Material or Chemical [CAS No.]	Exposure Limit					
2,4,6-Trinitrotoluene (TNT) [118-96-7]	PEL – 1.5 mg/m ³	Inhalation, Skin absorption, Ingestion, Skin or eye contact	Skin and mucous membrane irritation, liver damage, cyanosis, jaundice, sneezing, cough, sore throat, muscle pain, kidney damage, cataract, anemia, cardiac irregularities.	Eyes, skin, respiratory system, blood, liver, cardiovascular system, central nervous system, kidneys.	No	Common explosives constituent
	TLV – 0.1 mg/m ³					
Dinitrotoluene (DNT) <i>mixture of isomers</i> [25321-14-6]	PEL – 1.5 mg/m ³	Inhalation, Skin absorption, Ingestion, Skin or eye contact	Anoxia, cyanosis, anemia, jaundice, reproductive effects	Blood, liver, cardiovascular system, reproductive system	IARC – 2B (2,4- and 2,6- isomers)	Common explosives constituent
	TLV – 0.2 mg/m ³					
Cyclotrimethylene- trinitramine (RDX, Cyclonite) [121-82-4]	TLV – 0.5 mg/m ³	Inhalation, Skin absorption, Ingestion, Skin or eye contact	Eye and skin irritation, headache, irritability, weakness, tremor, nausea dizziness, insomnia, convulsions	Eyes, skin, central nervous system	ACGIH – A4	Common explosives constituent
Cyclotetramethylene- tetranitramine (HMX) [2691-41-0]	None listed	Not available	Not available	Not available	No	Common explosives constituent
Dinitrobenzene(DNB) <i>all isomers</i> [528-29-0, 99-65-0, 100-25-4]	PEL – 1 mg/m ³	Inhalation, Skin absorption, Ingestion, Skin or eye contact	Anoxia; cyanosis; visual disturbance; bad taste; dry throat; yellowing hair, skin, and eyes; anemia; liver damage	Eyes, skin, blood, liver, cardiovascular system, central nervous system	No	Common explosives constituent
	TLV – 1 mg/m ³					

Table 2-1. (continued).

Material or Chemical [CAS No.]	Exposure Limit ^a (Permissible Exposure Limit and Threshold Limit Value)	Routes of Exposure	Symptoms of Overexposure (Acute and Chronic)	Target Organs and System	Carcinogen? (Source) ^b	Matrix or Source at Project Site
Ammonium picrate (Explosive D)	None listed	Inhalation, Skin, Ingestion	Dermatitis; nausea; diarrhea; staining of the skin; seizures; irritation of the eyes, skin, mucous membranes;	Eyes, skin, central nervous system	No	Common explosives constituent
Carbon monoxide (CO) [630-08-0]	PEL – 50 ppm TLV – 25 ppm	Inhalation	Headache, nausea, weakness, dizziness, confusion, hallucinations, cyanosis, unconsciousness	Cardiovascular system, blood, lungs, central nervous system	No	Incomplete combustion product at detonation site
Ammonia (NH ₃) [7664-41-7]	PEL – 50 ppm TLV – 25 ppm	Inhalation	Eye, nose, and throat irritation; breathing difficulty; chest pain; pink, frothy sputum;	Eyes, skin, respiratory system	No	Combustion product at detonation site
Hydrogen cyanide (HCN) [74-90-8]	PEL – 10 ppm TLV – 5 mg/m ³ (4.7 ppm) Ceiling	Inhalation, Skin absorption, Ingestion, Skin or eye contact	Asphyxia, weakness, headache, confusion, nausea, thyroid and blood changes	Central nervous system, cardiovascular system, thyroid, blood	No	Combustion product at detonation site

a. Sources: *Threshold Limit Values Booklet* (ACGIH 2002) and substance-specific standards (29 CFR 1910).

b. If yes, identify agency and appropriate designation (i.e., ACGIH A1 or A2; National Institute of Occupational Safety and Health; Occupational Safety and Health Administration; International Agency for Research on Cancer; National Toxicology Program).

2.2.5 Fire and Flammable Materials Hazards

Detonation of UXO has the inherent potential to cause fires. All flammable materials will be removed from the detonation pit, to the extent feasible, prior to detonation. Portable fire extinguishers with a minimum rating of 10A/20BC will be located, as needed, at the project site to combat Class ABC fires. They will also be located in all vehicles and equipment that have exhaust heat sources, and on or near all equipment capable of generating ignition or having the potential to spark. The INEEL fire department shall be present during detonation activities to immediately respond to any fires resulting from the detonation of UXO.

When electrical explosives detonators are being used, no Radio Frequency producing equipment will be allowed within 50 feet of the detonators.

2.2.6 Heavy Equipment and Moving Machinery

Heavy equipment may be used to maintain the detonation pit and to remove excess plant growth as a fire protection measure before detonation activities begin. Hazards associated with the operation of heavy equipment include injury to personnel (e.g., struck-by and caught-between hazards) and equipment and property damage. All heavy equipment will be operated in the manner in which it was intended and in accordance with manufacturer's instructions. Only authorized qualified personnel will be allowed to operate equipment and personnel near operating heavy equipment and must maintain visual communication with the operator. Personnel will comply with MCP-2745, "Heavy Industrial Vehicles"; and MCP-2743, "Motor Vehicle Safety."

2.2.7 Excavation, Surface Penetrations, and Outages

The scope of this HASP does not cover large-scale excavation of buried UXO. In some cases, it may be necessary to excavate lightly buried UXO using hand tools. Based on the limited scope of this HASP, outages are not anticipated to be required.

2.2.8 Hoisting and Rigging of Equipment

Hoisting and rigging of equipment is not anticipated for UXO removal and detonation activities. However, if found necessary, all hoisting and rigging will be performed in accordance with PRD-160, "Hoisting and Rigging"; and DOE-STD-1090-01 "Hoisting and Rigging"; as applicable. Hoisting and rigging equipment will show evidence of a current inspection (e.g., tag) and be inspected before use by qualified personnel.

2.2.9 Overhead Objects

Personnel may be exposed to falling overhead objects or debris during UXO detonation. Personnel protection bunkers are located at the MDA and shall be utilized during detonation activities. In addition, all personnel not directly involved with detonation activities (e.g. spectators) shall remain behind the designated safe boundary line.

2.2.10 Personal Protective Equipment

Wearing PPE will reduce a worker's ability to move freely, see clearly, and hear directions and noise that might indicate a hazard. In addition, PPE can increase the risk of heat stress. Work activities at the task site will be modified as necessary to ensure that personnel are able to work safely in the required PPE. Work-site personnel will comply with MCP-2716, "Personal Protective Equipment," and MCP-432, "Radiological Personal Protective Equipment." All personnel who wear PPE will be trained in its use and limitations in accordance with MCP-2716.

2.3 Environmental Hazards and Mitigation

Potential environmental hazards will present potential hazards to personnel during project tasks. These hazards will be identified and mitigated to the extent possible. This section describes these environmental hazards and states what procedures and work practices will be followed to mitigate them.

2.3.1 Noise

Detonation activities may expose personnel to short-duration, high-intensity impact noise. The effects of high sound levels (noise) may include the following:

- Personnel being startled, distracted, or fatigued
- Physical damage to the ear and pain and temporary or permanent hearing loss
- Interference with communication that would warn of danger.

Personnel will be required to wear hearing protection during UXO detonation. Hearing protection devices will be selected and worn in accordance with MCP-2719.

2.3.2 Temperature and Ultraviolet Light Hazards

Project tasks will be conducted during times when there is a potential for heat or cold stress that could present a potential hazard to personnel. The industrial hygienist (IH) and HSO will be responsible for obtaining meteorological information to determine if additional heat or cold stress administrative controls are required. All project personnel must understand the hazards associated with heat and cold stress and take preventive measures to minimize the effects. MCP-2704, “Heat and Cold Stress” guidelines will be followed when determining work-rest schedules or when to halt work activities because of temperature extremes.

2.3.2.1 Heat Stress. High ambient air temperatures can result in increased body temperature, heat fatigue, heat exhaustion, or heat stroke that can lead to symptoms ranging from physical discomfort, unconsciousness, to death. In addition, tasks requiring the use of protective equipment or respiratory protection prevent the body from cooling. Personnel must inform the HSO or project field leader when experiencing any signs or symptoms of heat stress or observing a fellow employee (i.e., buddy) experiencing them. Heat stress stay times or work/rest regimens will be documented on the appropriate work control document(s), that is, an SWP, Pre-Job Briefing Form, or other by the HSO in conjunction with the IH (as required). These stay times will take into account the amount of time spent on a task, the nature of the work (i.e., light, moderate, or heavy), type of PPE worn, and ambient work temperatures. Table 2-2 lists heat stress signs and symptoms of exposure.

2.3.2.2 Low Temperatures and Cold Stress. Personnel will be exposed to low temperatures during fall and winter months or at other times of the year if relatively cool ambient temperatures combined with wet or windy conditions exist.

Additional cold weather hazards may exist from working on snow- or ice-covered surfaces. Slip, fall, and material-handling hazards are increased under these conditions. Every effort must be made to ensure walking surfaces are kept clear of ice. The FTL or HSO should be notified immediately if slip or fall hazards are identified at the project locations.

Table 2-2. Heat stress signs and symptoms of exposure.

Heat-Related Illness	Signs and Symptoms	Emergency Care
Heat rash	Red skin rash and reduced sweating.	Keep the skin clean, change all clothing daily, and cover affected areas with powder containing cornstarch or with plain cornstarch.
Heat cramps	Severe muscle cramps and exhaustion, sometimes with dizziness or periods of faintness.	Move the patient to a nearby cool place; give the patient half-strength electrolytic fluids; if cramps persist, or if signs that are more serious develop, seek medical attention.
Heat exhaustion	Rapid, shallow breathing; weak pulse; <u>cold, clammy skin</u> ; <u>heavy perspiration</u> ; total body weakness; dizziness that sometimes leads to unconsciousness.	Move the patient to a nearby cool place, keep the patient at rest, give the patient half-strength electrolytic fluids, treat for shock, and seek medical attention. DO NOT TRY TO ADMINISTER FLUIDS TO AN UNCONSCIOUS PATIENT.
Heat stroke	Deep, then shallow, breathing; rapid, strong pulse, then rapid, weak pulse; <u>dry, hot skin</u> ; dilated pupils; loss of consciousness (possible coma); seizures or muscular twitching.	Cool the patient rapidly. Treat for shock. If cold packs or ice bags are available, wrap them and place one bag or pack under each armpit, behind each knee, one in the groin, one on each wrist and ankle, and one on each side of the neck. Seek medical attention as rapidly as possible. Monitor the patient's vital signs constantly. DO NOT ADMINISTER FLUIDS OF ANY KIND.

Note: Heat exhaustion and heat stroke are extremely serious conditions that can result in death and should be treated as such. The field team leader (FTL) or designee should immediately request an ambulance (777 or 526-1515) be dispatched from the CFA-1612 medical facility and the individual cooled as described above in Table 2-2, based on the nature of the heat stress illness.

2.3.2.3 Ultraviolet Light Exposure. Personnel will be exposed to ultraviolet light (UV) (i.e., sunlight) when conducting project tasks. Sunlight is the main source of UV known to damage the skin and to cause skin cancer. The amount of UV exposure depends on the strength of the light, the length of exposure, and whether the skin is protected. No UV rays or suntans are safe. The following are mitigative actions that may be taken to minimize UV exposure:

- Wear clothing to cover the skin (long pants [no shorts] and long-sleeve or short-sleeve shirt [no tank tops])
- Use a sunscreen with a sun protection factor of at least 15
- Wear a hat (hard hat where required)
- Wear UV-absorbing safety glasses
- Limit exposure during peak intensity hours of 10 a.m. to 4 p.m., whenever possible.

2.3.3 Inclement Weather Conditions

When inclement or adverse weather conditions develop that may pose a threat to persons or property at the project site (e.g., sustained strong winds 25 mph or greater, electrical storms, heavy precipitation, or extreme heat or cold), conditions will be evaluated and a decision made by the HSO with input from other personnel to halt work, employ compensatory measures, or proceed. All work will comply with INEEL MCPs and facility work control documents that specify limits for inclement weather.

2.3.4 Biological Hazards

The INEEL is located in an area that provides habitat for various rodents, insects, and vectors (i.e., organisms that carry disease-causing microorganisms from one host to another). The potential exists for encountering nesting materials or other biological hazards and vectors. The Hantavirus may be present in the nesting and fecal matter of deer mice. If such materials are disturbed, they can become airborne and create a potential inhalation pathway for the virus. Contact and improper removal of these materials may provide additional inhalation exposure risks.

If suspected rodent nesting or excrement material is encountered, the industrial hygienist will be notified immediately and **no attempt will be made to remove or clean the area**. Following an evaluation of the area, disinfection and removal of such material will be conducted in accordance with MCP-2750, "Preventing Hantavirus Infection."

Snakes, insects, and arachnids (e.g., spiders, ticks, and mosquitoes) also may be encountered. Common areas to avoid include material stacking and staging areas, under existing structures (e.g., trailers and buildings), under boxes, and other areas that provide shelter. Protective clothing will generally prevent insects from direct contact with the skin. If potentially dangerous snakes or spiders are found or are suspected of being present, warn others, keep clear, and contact the industrial hygienist or HSO for additional guidance as required.

Insect repellent (DEET or equivalent) may be required. Areas where standing water has accumulated (e.g., evaporation ponds) provide breeding grounds for mosquitoes and should be avoided. In cases where a large area of standing water is encountered, it may be necessary to pump the water out of the declivity.

2.3.5 Confined Spaces

It is not anticipated to locate any confined spaces at the project sites. Contact the industrial hygienist if there is any question as to whether a space may meet the definition of a confined space. If entry into a confined space is required, then all requirements of MCP-2749, "Confined Spaces," will be followed.

2.4 Other Task-Site Hazards

Task-site personnel should continually look for potential hazards and immediately inform the FTL or HSO of the hazards so that action can be taken to correct the condition. All personnel have the authority to initiate STOP WORK actions in accordance with MCP-553 if it is perceived that an imminent safety or health hazard exists.

Personnel working at the task site are responsible to use safe-work practices, report unsafe working conditions or acts, and exercise good housekeeping habits with respect to tools, equipment, and waste throughout the course of the project.

2.5 Site Inspections

Project personnel may participate in site inspections during the work control preparation stage (such as the hazard identification and verification walkdowns), conduct self-assessments or other inspections.

Targeted or required self-assessments may be performed during operations in accordance with MCP-8, “Self-Assessment Process for Continuous Improvement.” Health and safety professionals present at the task site may, at any time, recommend changes in work habits. However, all changes that may affect the work control documents must have concurrence from the appropriate project technical representatives and a data analysis report prepared when required.

3. EXPOSURE MONITORING AND SAMPLING

Monitoring and sampling may be used during project tasks to assess the effectiveness of the procedural controls, and to determine the need for upgrading or downgrading of PPE as described in Section 5.

3.1 Environmental and Personnel Monitoring

Industrial Hygiene and Radiological Control (RadCon) personnel will conduct monitoring with direct reading instrumentation, collect swipes, and conduct full- and partial-period air sampling, as deemed appropriate in accordance with the applicable MCPs, OSHA substance-specific standards, and as stated on the RWP, as applicable. Instrumentation will be selected based on the site-specific conditions and contaminants associated with project tasks. The radiological control technician (RCT) and industrial hygienist will be responsible for determining the best monitoring technique for radiological and nonradiological contaminants (respectively). Safety hazards and other physical hazards will be monitored and mitigated as outlined in Section 2.

3.1.1 Industrial Hygiene Area and Personal Monitoring and Instrument Calibration

The project industrial hygienist will conduct full- and partial-period sampling of airborne contaminants and monitoring of physical agents as deemed appropriate. When conducted, all air sampling will be conducted using applicable National Institute of Occupational Safety and Health (NIOSH), OSHA, or other validated method. Both personal and area sampling and monitoring may be conducted.

Various direct-reading instruments may be used to determine the presence of nonradiological and other physical agents. The frequency and type of sampling and monitoring will be determined by changing site conditions, direct-reading instrument results, observation, professional judgment, and in accordance with the MCP-153, "Industrial Hygiene Exposure Assessment."

All monitoring instruments will be maintained and calibrated in accordance with the manufacturer's recommendations, existing Industrial Hygiene protocol, and in conformance with the companywide safety and health manuals, *Manual 14A – Safety and Health, Occupational Safety and Fire Protection* and *Manual 14B - Safety and Health, Occupational Health*. Direct reading instruments will be calibrated, at a minimum, before daily use and more frequently as determined by the project industrial hygienist. Calibration information, sampling and monitoring data, results from direct-reading instruments, and field observations will be recorded as stated in Section 12.

3.1.2 Area Radiological Monitoring and Instrument Calibration

It is not anticipated to find UXO in known radiological contamination areas. If a UXO removal project does occur in a radiological contamination area, radiological monitoring will be conducted during project tasks to ensure that personnel are given adequate protection from potential radiological exposure. Instruments and sampling methods may be used by the RCT as deemed appropriate and as required by project or task-specific RWPs. When conducted, monitoring will be performed in accordance with *Manual 15B - Radiation Protection Procedures* and *Manual 15C - Radiological Control Procedures*. The data obtained from monitoring will be used by RadCon personnel to evaluate the effectiveness of engineering controls, decontamination methods and procedures, and alert personnel to potential radiation sources.

Radiological Control personnel will be responsible to choose the appropriate radiological survey equipment. Daily operational and source checks will be performed on all portable survey instruments to

ensure they are within the specified baseline calibration limits. Accountable radioactive sources will be maintained in accordance with MCP-137, "Radioactive Source Accountability and Control." All radiological survey and monitoring equipment will be maintained and calibrated in accordance with the manufacturer's recommendations, existing RadCon protocol, and in conformance with MCP-93, "Health Physics Instrumentation."

4. ACCIDENT AND EXPOSURE PREVENTION

Project activities will present numerous safety hazards to personnel conducting these tasks. It is critical that all personnel understand and follow the site-specific requirements of this HASP and adhere to the standard operating procedures and technical requirements mentioned in Section 1.5. Engineering controls, hazard isolation, specialized work practices, and the use of PPE will all be implemented to eliminate or mitigate all potential hazards and exposures where feasible. However, all personnel are responsible for the identification and control of hazards in their work area in accordance with Integrated Safety Management System (ISMS) principals and practices. **At no time will hazards be left unmitigated without implementing some manner of controls (e.g., engineering controls, administrative controls, or the use of PPE).** Project personnel should use stop work authority in accordance with MCP-553, "Stop Work Authority" where it is perceived that immanent danger to personnel, equipment, or the environment exists.

This HASP is to be used in conjunction with INEEL PRD-25, "Activity Level Hazard Identification, Analysis, and Control" and work authorization and control documents such as STD-101, work orders, JSAs, MCP-3562, "Hazard Identification, Analysis, and Control of Operational Activities," and operational technical procedures. Where appropriate, MCP-3562 and GDE-6212, "Hazard Mitigation Guide for Integrated Work Control Process," mitigation guidance, JSAs, and RWPs will be incorporated into applicable sections of the HASP.

4.1 Voluntary Protection Program and Integrated Safety Management

The INEEL safety processes embrace the Voluntary Protection Program (VPP) and ISMS criteria, principles, and concepts to identify and mitigate hazards, thereby preventing accidents. All management and workers are responsible for implementing safety policies and programs and for maintaining a safe and healthful work environment. Project personnel are expected to take a proactive role in preventing accidents, ensuring safe working conditions for themselves and fellow personnel, and complying with all work control documents, procedures, and permits.

The **ISMS** is focused on the **system** side of conducting operations and **VPP** concentrates on the **people** aspect of conducting work. Both programs define work scope, identify and analyze hazards, and mitigate the hazards and additional information on these programs is available on the INEEL Intranet. Bechtel BWXT Idaho, LLC (current primary management and operating contractor) and its subcontractors participate in VPP and ISMS for the safety of their employees. This document includes all elements of both systems. The five key elements of VPP and ISMS and their corresponding HASP sections are as follows:

Voluntary Protection Program	Integrated Safety Management System	Health and Safety Plan Section
	Define work scope	Section 1
Work site analysis	Analyze hazards	Section 2, 3, 5, 8
Hazard prevention and control	Develop and implement controls	Section 2, 3, 4, 5, 7, 10 and 11
Safety and health training	Perform within work controls	Section 6
Employee involvement	Perform work within controls	Section 2, 3 and 4
Management leadership	Provide feedback and improvement	Section 6, 9

4.2 General Safe-Work Practices

Sections 1 and 2 defined the project scope of work and associated project-specific hazards and mitigation. The following practices are mandatory for all project personnel to further reduce the likelihood of accidents and injuries. All visitors permitted to enter work areas must follow these requirements. Failure to follow these practices may result in permanent removal from the project and other disciplinary actions.

- Limit work area access to authorized personnel only.
- All personnel have the authority to initiate STOP WORK actions in accordance with MCP-553.
- Personnel will not eat, drink, chew gum or tobacco, smoke, apply sunscreen, or perform any other practice that increases the probability of hand-to-mouth transfer and ingestion of materials in contaminated work areas. When work is performed in contaminated areas, designated eating and drinking areas will be established.
- Be aware of and comply with all safety signs, tags, barriers, and color codes as identified in accordance with PRD-5117, “Accident Prevention Signs, Tags, Barriers, and Color Codes.”
- Be alert for dangerous situations, strong or irritating odors, airborne dusts or vapors, and spills that may be present. Report all potentially dangerous situations to the Senior UXO Supervisor.
- Avoid direct contact with hazardous materials. Personnel will not walk through spills or other areas of contamination and will avoid kneeling, leaning, or sitting on equipment or surfaces that may be contaminated.
- Be familiar with the physical characteristics of the project site, including, but not limited to:
 - Prevailing wind direction
 - Location of fellow personnel, equipment, and vehicles
 - Communications at the project site and with nearest facility
 - Major roads and means of access to and from the project site
 - Location of emergency equipment
 - Warning devices and alarms for area or facility
 - Capabilities and location of nearest emergency assistance.
- Report all broken skin or open wounds to the Senior UXO Supervisor. An Occupational Medical Program (OMP) physician must examine all wounds to determine the nature and extent of the injury. If required to enter into a radiological contamination area, a RadCon supervisor will determine whether the wound can be bandaged adequately in accordance with Article 542 of the INEEL Radiological Control Manual (Manual 15A).
- Ground-fault protection will be provided whenever temporary wiring (i.e. extension cord) is used. Cords are to be rated in accordance with PRD-5099, “Electrical Safety”.

- Keep all ignition sources at least 15 m (50 ft) from explosive or flammable environments.
- Follow all safety and radiological precautions and limitation of technical procedures and requirements identified in work packages.

4.3 Subcontractor Responsibilities

Subcontractors are responsible for meeting all applicable INEEL MCP, PRD, VPP, and ISMS flow-down requirements such as those listed on the completed INEEL Form 540.10, “Checklist for Subcontractor Requirements for On-Site Nonconstruction Work”; *Subcontractor Requirements Manual* (TOC-59); and contract general and special conditions. Additionally, subcontractor are expected to take a proactive role in hazard identification and mitigation while conducting project tasks and report unmitigated hazards to the appropriate project point of contact after taking mitigative actions within the documented work controls.

4.4 Buddy System

The two-person, or buddy system, will be used during project tasks. The buddy system requires each employee to assess and monitor his or her buddy’s mental and physical well being during the course of the operation. A buddy must be able to perform the following activities:

- Provide assistance if required
- Verify the integrity of PPE
- Observe his or her buddy for signs and symptoms of heat stress, cold stress, or contaminant exposure
- Notify other personnel in the area if emergency assistance is needed.

5. PERSONAL PROTECTIVE EQUIPMENT

This section provides guidance for the selection and use of PPE to be worn for project tasks and contingencies for upgrading and downgrading PPE. Types of PPE are generally divided into two broad categories: (1) respiratory protective equipment and (2) PPE. Both of these categories are incorporated into the standard four levels of protection (Levels A, B, C, and D).

The purpose of personal protective clothing and equipment is to shield or isolate individuals from the hazards that may be encountered during project tasks when engineering and other controls are not feasible or cannot provide adequate protection. It is important to realize that no one PPE ensemble can protect against all hazards under all conditions and that proper work practices and adequate training will serve to augment PPE to provide the greatest level of protection to workers.

The type of PPE will be selected, issued, used, and maintained in accordance with MCP-2716. Selection of the proper PPE is based on the following considerations:

- Specific conditions and nature of the tasks
- Potential contaminant routes of entry
- Physical form and chemical characteristics of hazardous materials
- Toxicity of hazardous materials that may be encountered
- Duration and intensity of exposure (acute or chronic)
- Compatibility of chemical(s) with PPE materials and potential for degradation or breakthrough
- Environmental conditions (e.g., humidity, heat, cold, rain)
- The hazard analysis (Section 2) evaluation of this HASP.

Based on the criteria listed above, modified Level D equipment is all that is required when performing EOD activities. Though not anticipated, a full- or half-face respirator fitted with a particulate filter or chemical cartridge (Level C) may also be worn as determined by the IH or HSO.

5.1 Level D Personal Protective Equipment

Level D PPE affords little protection against chemical hazards and is appropriate for use during all EOD activities when personnel are not expected to be exposed to airborne explosive materials at concentrations above the threshold-limit value (TLV) or permissible exposure limit (PEL) (see Table 2-1 for a list of the TLVs and PELs for potential chemical hazards).

The Level D PPE required for EOD tasks under this HASP include:

- Coveralls or street clothes
- Hard hat
- Safety glasses with side shields

- Sturdy leather boots with steel or composite reinforced toe
- Leather gloves when handling ordnance or shrapnel
- Hearing protection during detonation activities

Level C PPE upgrades that may be implemented by the IH, RCT, or HSO include:

- Nitrile gloves when handling explosive compounds or materials contaminated with explosive compounds
- Respiratory protection
- Anti-C clothing per RWP.

All personnel required to wear respirators will complete training and be fit-tested before being assigned a respirator in accordance with the training and documentation requirements in Section 6. Requirements for respirator use, emergency use, storage, cleaning, and maintenance, as stated in the MCP-2726, "Respiratory Protection," will be followed.

If radiological contamination is encountered at levels requiring the use of anti-contamination (Anti-C) clothing, a task-specific RWP will be developed and MCP-432 will be followed.

The project HSO, in consultation with the project industrial hygienist (and RadCon personnel, as applicable), will be responsible for determining when to upgrade or downgrade PPE requirements. Upgrading or downgrading of PPE based on changing site conditions or activities is a normal occurrence.

<p>Note: Personnel must inspect all PPE before donning. Items found to be defective or that become unserviceable during use, will be doffed and disposed of in accordance with posted procedures and placed into the appropriate waste stream, as applicable.</p>
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6. PERSONNEL TRAINING

All INEEL personnel will receive training, as specified in 29 CFR 1910.120 and INEEL companywide manuals as applicable. Table 6-1 summarizes the project-specific training requirements for personnel-based access requirements, responsibilities at the project site, potential hazards, and training level requirements.

Modifications (e.g., additions to or elimination of) to training requirements listed in Table 6-1 may be necessary based on changing field conditions. Any changes to the requirements listed in Table 6-1 must be approved by the HSO, with concurrence from the Senior UXO Supervisor, project manager, RCT, and industrial hygienist, as applicable. These changes should be based on site-specific conditions and will generally be considered a minor change to the HASP, as defined by instructions from Form 412.11, "Document Management Control Systems (DMCS) Document Action Request (DAR)," because they are administrative in nature.

6.1 General Training

All project personnel are responsible for meeting training requirements including applicable refresher training. Evidence of training will be maintained at the project site, field administrative location, or electronically (e.g., Training Records and Information Network [TRAIN] [INEEL 2001]). Nonfield team personnel and visitors must be able to provide evidence of meeting required training for the area of the site they wish to access before being allowed into a project area. As a minimum, all personnel who access project locations must receive a site-specific briefing, are required to wear PPE, and must provide objective evidence of having completed INEEL computer-based PPE training (00TRN288, "Personal Protective Equipment") or equivalent, in accordance with 29 CFR 1910.132, "Personal Protective Equipment."

6.2 Project-Specific Training

Before beginning work at the project site, field team members will receive project-specific HASP training that will be conducted by the HSO (or designee). This training will consist of a complete review of (1) a controlled copy of the project HASP, attachments, and document action requests, (2) applicable JSAs and SWPs (if required), (3) work orders, and (4) other applicable work control and work authorization documents, with time for discussion and questions. Project-specific training can be conducted in conjunction with, or separately from, the required formal pre-job briefing (MCP-3003).

At the time of project-specific HASP training, personnel training records will be checked and verified to be current and complete for all the training requirements shown in Table 6-1. After the HSO (or designee) has completed the site-specific training, personnel will sign Form 361.25, "Group Read and Sign Training Roster," or equivalent, indicating that they have received this training, understand the project tasks, associated hazards and mitigations, and agree to follow all HASP and other applicable work control and safety requirements. Form 361.25 (or equivalent) training forms are available on the INEEL Intranet under "Forms."

A trained HAZWOPER 8-hour supervisor will monitor the performance of each newly 24-hour or 40-hour trained worker to meet the 1 or 3 days of supervised field experience, respectively, in accordance with 29 CFR 1926.120(e). Following the supervised field experience period, the supervisor will complete Form 361.47, "HAZWOPER Supervised Field Experience Verification," or equivalent, to document the supervised field experience.

Table 6-1. Required project-specific training.

Required Training	Senior UXO Supervisor	HSO, UXO Specialist	Other Field Team Members	Access into the Designated or Controlled Work Area
Work site orientation	Yes	Yes	Yes	Yes
40-hour hazardous waste operations (HAZWOPER) ^a - operations	Yes	Yes	b	b
24-hour HAZWOPER ^a - operations			b	b
8 hour HAZWOPER Supervisor	Yes			
Project-specific health and safety plan training ^c	Yes	Yes	Yes	Yes
Fire extinguisher training (or equivalent)	Yes	Yes	d	
Cardiopulmonary resuscitation, medic first-aid	Yes	Yes	d	
PPE use training	Yes	Yes	Yes	Yes
Hearing Conservation	Yes	Yes	e	e
Military Explosive Ordnance Disposal School Graduate	Yes	Yes		
Hazardous Material (HAZMAT) Employee General Awareness Training	f	f	f	
At least 15 years EOD experience	Yes			
Radiological Worker I or II	g	g	g	g
Respirator training (contingency only)	h	h	h	i

Note: Shaded fields indicate specific training is not required or applicable.

a. Includes 8-hour hazardous waste operations (HAZWOPER) refresher training as applicable, and supervised field experience as follows: 40-hour HAZWOPER = 24-hour supervised field experience and 24-hour HAZWOPER = 8-hour supervised field experience).

b. 40-hour or 24-hour HAZWOPER training requirement will be determined by the HSO based on the nature of the project tasks and potential for exposure to contaminants or safety hazards.

c. Includes project-specific hazards communications (29 CFR 1910.120), site-access and security, decontamination and emergency response actions, as required by 29 CFR 1910.120(e).

d. Senior UXO Supervisor and HSO will determine appropriate number of personnel requiring training.

e. As required per MCP-2719. Consult with IH.

f. If identified as "HAZMAT" employee [i.e. anyone who directly affects hazardous material transportation safety by handling, packaging, labeling, loading, unloading, moving, driving, etc. (per 49 CFR 171.8)].

g. If entry into radiological areas occurs Radiological Worker Training will be required per RCT and RWP.

h. Only required if entering area requiring respiratory protection.

i. Non-field workers will not be allowed into areas requiring respiratory protection.

6.3 Plan of the Day Briefing, Feedback, and Lessons Learned

A daily plan-of-the-day (POD) or equivalent meeting will be conducted by the Senior UXO Supervisor or designee. During this meeting, daily tasks are to be outlined; hazards identified, hazard controls, mitigation, and work zones established; PPE requirements discussed; and feedback from personnel solicited. At the completion of this meeting, any new work control documents will be reviewed and signed (e.g., SWP, JSA, or RWP).

Note: If a formal MCP-3003 pre-job briefing is conducted during the work shift, a POD is not required.

Particular emphasis will be placed on lessons learned from the previous workday's activities and how tasks can be completed in the safest, most efficient manner. All personnel are encouraged to contribute ideas to enhance worker safety and mitigate potential exposures at the project sites. This POD will be conducted as an informal meeting.

Safety and health topic-specific training or safety meetings may also be conducted during the course of the project to reinforce key safety topics. They may be conducted by project safety and the industrial hygienist or any field team member and should be performed in conjunction with the POD. Credit for a safety meeting can be received for such topic-specific training if a tailgate training form (INEEL Form 361.24), "Tailgate Attendance Roster" or equivalent is completed and submitted to the appropriate training coordinator for entry into TRAIN.

7. SITE CONTROL AND SECURITY

Site control and security will be maintained at the project locations during all activities to prevent unauthorized personnel from entering the work area. Entry into and exit out of these areas will be controlled through the appropriate use of barriers, signs, and other measures in accordance with PRD-5117.

The Senior UXO Supervisor and HSO should be consulted regarding equipment layout at the project site to minimize personnel hazards from equipment. The layout at the project site of equipment should reflect the nature of the hazard presented and should be mitigated through the use of engineering controls (barriers, guards, isolation), administrative controls (roped off restricted areas or controlled entry access), and qualifications of operators and those assisting in the operation of the equipment, when required.

Good housekeeping will be maintained at all times during the course of the project. This includes maintaining working and walking surfaces to minimize tripping hazards, stacking or storing materials and equipment in a centralized location when not in use, and regular cleanup of debris and trash that may accumulate at the project site.

Based on the nature of the project tasks to be completed, a graded approach with two types of site control designations will be used based on the potential hazards, complexity of work tasks, duration of project tasks, and location and number of non-project personnel near the project area. The two types of work areas are:

- Designated work areas (DWA) (established for low-hazard routine tasks)
- Controlled work areas (CWA) (established for higher hazard tasks).

The primary differences between the work areas will be the size of the area, method of delineation, and postings as determined by the activity being conducted and associated hazards. The determination of what type of work area will be established will be made by the Senior UXO Supervisor in conjunction with the HSO and RadCon personnel (where radiological concerns exist).

Personnel not directly involved with project activities will be excluded from entering these work areas. Visitors may be admitted into work areas provided they are (1) on official business, (2) received site-specific training or orientation by the Senior UXO Supervisor or designee, and (3) have met all the site-specific training requirements for the area they have a demonstrated need to access, as listed on Table 6-1.

Note: Visitors may not be allowed into controlled work areas during certain tasks to minimize risks to workers and visitors. The determination as to any visitor's need for access into the controlled work area will be made by the Senior UXO Supervisor in consultation with the HSO.

All potential hazards will be evaluated when delineating each work area location and size. Barriers (e.g., rope, cones, and printed ribbon) may be used for delineation and demarcation. Where warranted, designated traffic routes may also be established. These areas also will be posted to prevent inadvertent entry by unauthorized personnel.

7.1 Designated Work Area

The DWAs established will consist of the area immediately around the work area, including all equipment. The boundary of the DWA will typically be marked with cones or stanchions and generally will not be delineated with rope or ribbon or include other demarcation. All personnel who enter the DWA will wear the appropriate level of PPE for the degree and type of hazards present, as listed in Section 5. All DWAs will be delineated and posted with the appropriate signage based on the hazard being controlled, in accordance with PRD-5117. Visitors who do not have appropriate training or PPE to access the DWA will be restricted from entering.

7.2 Controlled Work Area

The CWAs will be large enough to encompass the equipment and nature of the tasks being conducted to prevent personnel not assigned to the project task and visitors from being exposed to potential safety and health hazards associated with the project tasks. This type of work area will be established where a more restrictive area is required based on increased hazards. The boundary of the CWA may be marked with a combination of stanchions or posts and delineated with rope or ribbon and include warning signs or other demarcation. Only the minimum number of personnel required to safely perform the project tasks will be allowed into the CWA. The CWA is a controlled area during all project tasks and an entry and exit point will be established at the periphery of the CWA to regulate the flow of personnel and equipment. All personnel who enter the CWA will wear the appropriate level of PPE for the degree and type of hazards present, as listed in Section 5.

The MDA will be treated as a CWA during all detonation activities. All visitors will remain at the visitor staging area located at the barricade on the access roadway, or at an alternate location chosen by the Senior UXO Supervisor. Only essential workers will be allowed inside the MDA. The Senior UXO Supervisor has final authority in determining who may enter the MDA.

7.3 Wash Facilities and Designated Eating Areas

Ingestion of hazardous substances is possible when workers do not practice good personal hygiene habits. It is important to wash hands, face, and other exposed skin thoroughly after completion of work and before smoking, eating, drinking, and chewing gum or tobacco. No smoking, chewing, eating, or drinking is allowed inside the DWA or CWA. The designated wash facility will be determined prior to each project and will be discussed in the pre-job briefing. Typically, the nearest facility building will serve as the designated wash facility.

7.4 Designated Smoking Area

Due to the high fire potential at the ordnance sites, smoking will only be permitted in designated smoking areas and personnel will comply with all INEEL smoking policies including disposing of smoking materials in the proper receptacle. Smoking will not be permitted without establishing a designated smoking area. The Senior UXO Supervisor will be the single point of contact for establishing any smoking area. Smoking areas may not be permitted at certain times of the year because of high or extreme fire danger.

8. OCCUPATIONAL MEDICAL SURVEILLANCE

Task-site personnel will participate in the INEEL occupational medical surveillance program (or equivalent subcontractor program), as required by DOE Order 440.1, “Worker Protection Management for DOE Federal and Contractor Employees,” and 29 CFR 1910.120. Medical surveillance examinations will be provided before assignment, annually, and after termination of HAZWOPER duties or employment. This includes:

- Personnel who are, or may be, exposed to hazardous substances at or above the OSHA PEL, or published exposure limits, without regard to respirator use for 30 or more days per year
- All employees who are injured, become ill, or develop signs or symptoms because of possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation
- All employees who wear a respirator for 30 days or more a year or as required by “Respiratory Protection” (29 CFR 1910.134).

Personnel who wear a respirator in performance of their job, or who are required to take respirator training to perform their duties under this plan, must participate in the medical evaluation program for respirator use at least annually, as required by MCP-2726, “Respiratory Protection.”

A single copy of the project HASP, job hazard analysis requirements, required PPE, confined space entry requirements (as applicable), and other exposure-related information will be made available, upon request, to the INEEL OMP physician (and subcontractor physicians) conducting medical surveillance for employees participating in this project. Exposure monitoring results and hazard information furnished to the OMP physician will be supplemented or updated annually as long as the employee is required to maintain a hazardous waste and material employee medical clearance. The OMP physician will then evaluate the physical ability of an employee to perform the work assigned.

A documented medical clearance (e.g., a physician’s written opinion) will be provided to the employee and line management stating whether the employee has any detected medical condition that would place him or her at increased risk of health impairment from working in hazardous waste operations, emergency response operations, respirator use areas, and confined space areas, as applicable. The physician may impose restrictions on the employee by limiting the amount and type of work performed.

Personnel are responsible for communicating any work or medical restrictions to their supervisor so modified work assignments can be made if necessary. During the MCP-3003 pre-job briefing, the supervisor conducting the briefing should ask workers if they have any work restrictions. However, it is the employee’s responsibility to inform the supervisor of any work or medical restrictions.

8.1 Subcontractor Workers

Subcontractor project personnel will participate in a subcontractor medical surveillance program that satisfies the applicable requirements of 29 CFR 1910.120. This program must make medical examinations available before assignment, annually, and after termination of hazardous waste duties as stated above. The physician’s written opinion, as defined by 29 CFR 1910.120(f)(7) (or equivalent), will serve as documentation that subcontractor personnel are fit for duty or will list work restrictions.

Medical data from the subcontractor employee's private physician, collected pursuant to hazardous material worker qualification, will be made available to the INEEL OMP physicians on request.

8.2 Injuries on the Site

It is the policy of the INEEL that an INEEL OMP physician examine all injured personnel for the following reasons:

- An employee is injured on the job
- An employee is experiencing signs and symptoms consistent with exposure to a hazardous material
- An employee is believed to have been exposed to toxic substances or physical or radiological agents in excess of allowable limits during the course of a project at the INEEL.

Note: In the event of an illness or injury, the decision to provide first aid and transport to the nearest medical facility or whether to immediately request an ambulance and continue to stabilize and provide first aid should be based on the nature of the injury or illness and likelihood that transporting the individual may cause further injury or harm. Most likely, the person making this decision will only be trained to the medic first/CPR level and should contact the CFA medical facility at 777 or 526-1515 for further guidance if there is any question as to the extent of injury or potential to cause further harm by movement of the injured individual.

In the event of a known or suspected injury or illness caused by exposure to a hazardous substance or physical or radiological agent, the employee will be transported to the nearest INEEL medical facility for evaluation and treatment, as necessary. The HSO and FTL are responsible for obtaining as much of the following information as is available to accompany the individual to the medical facility:

- Name, job title, work (site) location, and supervisor's name and phone number
- Substance, physical or radiological agent exposed to (known or suspected), and material safety data sheet, if available
- Nature of the incident and injury or exposure and associated signs or symptoms of exposure
- First aid or other measures taken
- Locations, dates, and results of any relevant personal or area exposure monitoring or sampling
- List of PPE worn during this work (e.g., type of respirator and cartridge used).

Further medical evaluation will be determined by the treating or examining physician in accordance with the signs and symptoms observed, hazard involved, exposure level, and specific medical surveillance requirements established by the OMP director in compliance with 29 CFR 1910.120.

Note: In the event of an illness or injury, subcontractor employees will be taken to the closest INEEL medical facility (if doing so will not cause further injury or harm) or be transported by INEEL ambulance to have an injury stabilized before transport to the subcontractor's treating physician or off-Site medical facility.

The proper facility representative will be contacted if any injury or illness occurs at a project site. Most ordnance locations are outside facility boundaries, and thus fall under the jurisdiction of the CFA Site Area Director (SAD). If the ordnance removal site happens to fall under the jurisdiction of a facility other than CFA, the proper emergency contact will be announced during the pre-job briefing. As soon as possible after an injured employee has been transported to the INEEL medical facility, the Senior UXO Supervisor or designee will make notifications as indicated in Section 10.

8.3 Substance-Specific Medical Surveillance

No contaminants (listed in 29 CFR 1910 Subpart Z) with substance-specific standards have been identified for UXO project tasks. If new contaminants of concern are identified during the course of project tasks, exposures will be evaluated and quantified to determine if a substance-specific standard and associated medical surveillance requirements apply. If regulatory-mandated substance-specific standard action levels are triggered, then affected personnel will be enrolled in applicable substance-specific medical surveillance programs.

9. KEY SITE PERSONNEL RESPONSIBILITIES

The organizational structure for this project reflects the resources and expertise required to perform the work while minimizing risks to worker health and safety, the environment, and the public. Key project positions, lines of responsibility and communication are shown on the organization chart for the Site (see Figure 9-1). This organization chart is not all-inclusive, but shows the structure for key resources assigned to complete project tasks. The environmental restoration (ER) program management plan (PMP) and project-specific project execution plan (PEP) details roles and responsibilities for ER Program personnel above the project manager level. The following text outlines the responsibilities of key site personnel.

9.1 Environmental Restoration Program and Project Management

The following positions and associated roles and responsibilities are described in the ER PMP and the project PEP:

- Environmental Restoration manager of projects
- ER Program safety, health, and quality assurance (SH&QA) manager
- Waste Area Group (WAG) manager
- Project engineer
- Environmental Compliance support
- Quality engineer.

9.1.1 Project Manager

The project manager is responsible for the development and management of the project and the coordination of ER project operations. The project manager ensures that operations, Federal Facility Agreement and Consent Order (DOE-ID 1991) compliance support, surveillance, and monitoring activities are conducted in accordance with INEEL MCPs and PRDs, all applicable OSHA, U.S. Environmental Protection Agency, DOE, U.S. Department of Transportation (DOT), and State of Idaho requirements, and that tasks comply with Plan (PLN) -694, "Program Management Plan, Environmental Restoration Program Management Plan," and this HASP. The project manager is responsible for the overall work scope, schedule, and budget for this project and reports to the ER WAG manager.

9.1.2 Environmental Compliance Support

Environmental Compliance support personnel oversee, monitor, and advise the PM and Senior UXO Supervisor performing site activities on environmental issues and concerns by ensuring compliance with DOE orders, EPA regulations, and other regulations concerning the effects of site activities on the environment. ER Environmental Compliance support personnel provide support surveillance for hazardous waste storage and transportation, and surface water/storm water runoff control.

9.2 Task Site Responsibilities

9.2.1 Unexploded Ordnance Personnel

UXO personnel shall be U.S. citizens and graduates of the US Army Bomb Disposal School, Aberdeen Proving Ground, MD, the US Naval Explosive Ordnance Disposal School, Indian Head, MD, or Eglin Air Force Base, Florida. UXO personnel shall have never been removed from an EOD assignment for personnel reliability reasons or unsatisfactory performance of duties, substantiated by official documentation. Credit for EOD experience in National Guard or Reserve Units will be based on the actual documented time spent on active duty, not on the total time of service.

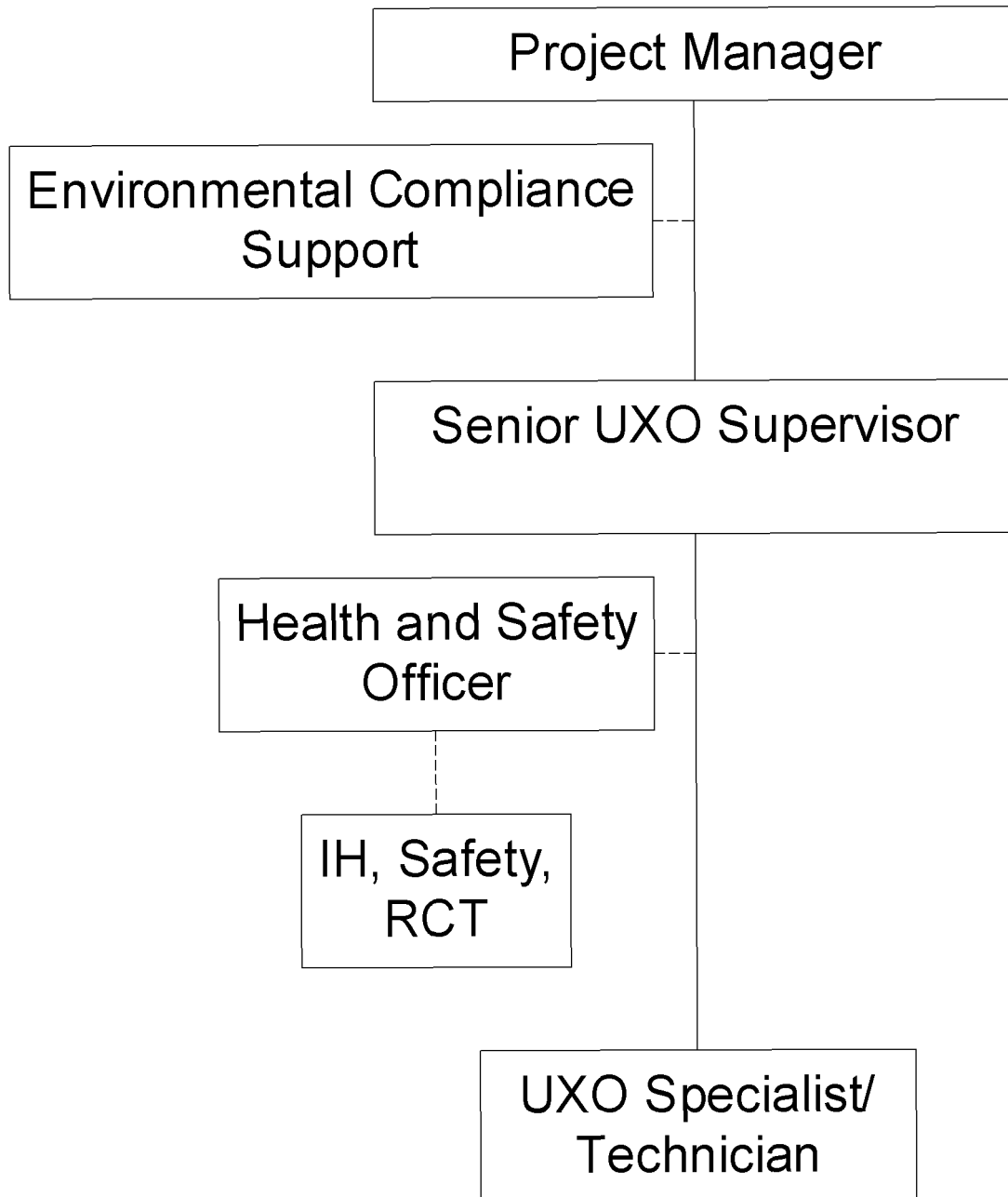


Figure 9-1. Organization chart.

9.2.1.1 Senior UXO Supervisor. The Senior UXO Supervisor is in charge of all field work. The Senior UXO Supervisor is the field supervisor for personnel assigned to work at the site. The Senior UXO Supervisor works to accomplish day-to-day operations at the work site, identify and obtain additional resources needed at the site, and interact with the IH, safety engineer, RCT, and HSO on matters regarding safety and health. The Senior UXO Supervisor must be informed about any health and safety issues that arise at the work site and may stop work at the site if an unsafe condition exists. The Senior UXO Supervisor also shares the responsibility for daily pre-work briefings.

The Senior UXO Supervisor has the ultimate responsibility for UXO procedural and safety decisions and serves as overall field supervisor for all UXO field activities. The Senior UXO Supervisor shall be on-site during UXO field operations.

The Senior UXO Supervisor shall have served at least 15 years in military EOD assignments, to include at least 10 years in supervisory EOD positions. Three years of documented civilian contractor UXO experience may be substituted for three years of active duty military EOD experience. This individual shall have documented experience supervising multi-team operations involving range clearance actions. This individual shall have pertinent experience with the type of EO expected to be encountered at the site.

9.2.1.2 Health and Safety Officer. The HSO is the person assigned to the task site who serves as the primary contact for all health and safety issues. The HSO advises the Senior UXO Supervisor on all aspects of health and safety and is authorized to stop work at the task site if any operation threatens worker or public health or safety. The HSO is authorized to verify compliance to the HASP, conduct inspections and self-assessments, require and monitor corrective actions, and monitor decontamination procedures as appropriate. The SH&QA professionals at the task site (e.g., safety professional, industrial hygienist, environmental coordinator, and facility representative) support the HSO.

Persons assigned as the HSO or alternate HSO must be qualified (in accordance with the definition in 29 CFR 1910.120) to recognize and evaluate hazards, and will be given the authority to take or direct actions to ensure that workers are protected. Due to EOD training and experience requirements, the Senior UXO Supervisor will typically also be the project HSO.

If it is necessary for the HSO to leave the site, an alternate individual will be appointed by the HSO to fulfill this role and that person's identity will be communicated to project personnel. If no other personnel on the job site can meet the training and experience requirements for the HSO alternate, work will cease until a qualified HSO is present.

9.2.1.3 UXO Specialist/Technician. The UXO Specialist reports to the Senior UXO Supervisor and performs all UXO field tasks, including excavation, identification and disposal of UXO by detonation. The UXO specialist can serve as a supervisor of a small work unit. This individual shall have more than three years active military EOD experience. A UXO Specialist may be an UXO Assistant with at least five years combined military EOD and contractor UXO Experience.

9.2.2 Industrial Hygienist

The assigned industrial hygienist is the primary source for information about exposure assessments for the project chemical, physical, and biological hazards at the task site. The industrial hygienist assesses the potential for worker exposures to hazardous agents in accordance with Companywide Safety and Health Manuals, MCPs, and industry-accepted industrial hygiene practices and protocol. By participating in project planning, the industrial hygienist assesses and recommends appropriate hazard controls for the protection of site personnel, operates and maintains airborne sampling and monitoring equipment, reviews

engineering controls for effectiveness, and recommends and assesses the use of PPE required in this HASP (recommending changes as appropriate).

9.2.3 Safety Professional

The assigned safety professional reviews work packages, observes site activity, assesses compliance with the Companywide Safety and Health Manuals, advises the Senior UXO Supervisor on required safety equipment, and recommends solutions to safety issues and concerns that arise at the task site. The safety professional may conduct periodic inspections in accordance with MCP-3449 and have other duties at the task site as specified in other sections of this HASP or in PRDs and MCPs. Copies of any safety and health inspections will be kept in the project field file.

9.2.4 Radiological Control Technician

The assigned RCT is the primary source for information and guidance on radiological hazards that may be encountered during project tasks and controls necessary to mitigate them. Responsibilities of the RCT include the following:

- Performing radiological surveying of the site, equipment, and samples
- Providing guidance for radioactive decontamination of equipment and personnel
- Accompanying the affected personnel to the nearest INEEL medical facility for evaluation if significant radionuclide contamination occurs.

The RCT must notify the Senior UXO Supervisor and HSO of any radiological occurrence that must be reported, as directed by the INEEL Radiological Control Manual.

9.2.5 Fire Protection Engineer

A fire protection engineer provides technical guidance to the HSO and Senior UXO Supervisor about all fire protection issues, and may be assigned to review the work packages and conduct pre-operational and operational fire hazard assessments. The fire protection engineer is required to sign all safe work permits used as hot work permits within the jurisdiction of the their facility SAD. The INEEL fire department will also need to be notified and made available for detonation activities in the MDA.

9.2.6 Specialty Subcontractors

Specialty subcontractors may be used to support EOD operations. A subcontractor lead may be appointed to serve as the single point of contact for all subcontractor communication at the site and report to the Senior UXO Supervisor for all technical direction and interface issues at the project site. Subcontractor personnel will report any health and safety issues that arise to the Senior UXO Supervisor or HSO and may stop work if an unsafe condition exists. The subcontractor lead also will be asked to provide hazard and mitigation information about the nature of their equipment or operations during the POD meeting and may participate in job-site hazard walkdowns where appropriate.

9.2.7 Field Team Personnel

All field team personnel, including facility and subcontractor support personnel assigned to the project, will understand and comply with the requirements of this HASP. The Senior UXO Supervisor (or

designee) will conduct a formal pre-job briefing or POD at the start of each shift. During the POD briefing, all daily tasks, associated hazards, hazard mitigation (e.g., engineering and administrative controls, required PPE, and work control documents), and emergency conditions and actions will be discussed. Input from the project HSO, industrial hygienist, and safety personnel (where assigned) will be provided to clarify task health and safety requirements as deemed appropriate. All project personnel are encouraged to ask questions about site tasks and provide suggestions on ways to perform required tasks in a more safe and effective manner based on the lessons learned from previous routine monitoring activities.

Once at the project site, field team personnel are responsible for identifying any potentially unsafe situations or conditions to the Senior UXO Supervisor or HSO for corrective action.

9.2.8 Nonfield Team Personnel

All persons who may be at a project site and are not part of the field team (e.g., surveyors or others not assigned a field team support role) are considered nonfield team personnel as defined by this HASP.

Nonfield team personnel are considered occasional site workers in accordance with the HAZWOPER and must receive site-specific HASP training before entering work areas at the project site, unless there is no potential for exposure and safety hazards are mitigated (e.g., during down time). In such a case, a site orientation briefing covering potential safety and health hazards, required PPE, and emergency actions is required before being granted access to the area. A site supervisor (e.g., Senior UXO Supervisor or HSO) will supervise nonfield team personnel who have not completed their 3 days of supervised field experience in accordance with the HAZWOPER.

9.2.9 Visitors

All visitors with official business at the project site (including INEEL personnel, representatives of DOE, and state or federal regulatory agencies) may only proceed to the work area after meeting the following requirements:

- Receiving site-specific HASP training or hazard briefing based on specific tasks taking place
- Signing a HASP training roster and providing proof of having met all training requirements specified in Section 6 (or required access training for the area to be visited when project tasks are not being conducted)
- Participating in a pre-job briefing in accordance with MCP-3003
- Providing objective evidence of PPE training and wearing the appropriate PPE for the area of the site to be accessed (29 CFR 1910.132).

If there is no potential for exposure to chemical, radiological, or safety hazards (e.g., down time) a visitor may be escorted at the project site after receiving a site orientation consisting of:

- An overview of the controlled areas at the site and access restrictions
- Potential general site hazards and mitigation
- Required PPE for entry to the site (must be trained to wear required PPE)

- Emergency action to take in case of a take-cover or evacuation alarm.

Note: Visitors will not be allowed into controlled work areas (even with proper training) during certain tasks (at the discretion of the Senior UXO Supervisor) to minimize risks to visitors. The determination as to any visitor's need for access into the controlled work areas during such tasks will be made by the Senior UXO Supervisor in consultation with the HSO.

A fully trained task-site representative (e.g., Senior UXO Supervisor or HSO) will escort visitors when entering controlled areas of the project site, as site conditions warrant, and as deemed appropriate by the Senior UXO Supervisor.

A casual visitor to the task site is a person who does not have a specific task to perform or other official business to conduct at the project site. *Casual visitors are not permitted in designated work areas at any project site.*

10. EMERGENCY RESPONSE PLAN

This emergency response plan defines the roles and responsibilities of project personnel during an emergency. Such an emergency could be at the project site, on a tenant facility or collocated facility, or a Site-wide emergency. This section provides details of the INEEL Emergency Response Organization (ERO) and “INEEL Emergency Plan RCRA Contingency Plan” (PLN-114) information. PLN-114 describes the overall process developed to respond to and mitigate consequences of emergencies that might arise at the INEEL.

Plan-114 may be activated in response to events occurring at the project site, at the INEEL, or at the discretion of the emergency coordinator or emergency action manager. Once the INEEL plan is activated, project personnel will follow the direction and guidance communicated by the emergency coordinator.

Note: The OSHA HAZWOPER definition of an emergency is not defined the same as classified by DOE Orders 151.1A, “Comprehensive Emergency Management System,” and 232.1, “Occurrence Reporting and Processing of Operations Information.” For this reason, the term “event” will be used in this section when referring to project HAZWOPER emergencies.

10.1 Pre-Emergency Planning

The “INEEL Emergency Plan RCRA Contingency Plan” (PLN-114) provides the basis for preplanning all INEEL emergency events. This base plan is supplemented with INEEL facility-specific addenda. This preplanning makes it possible for the project to anticipate and appropriately respond to abnormal events that can affect project activity. Preplanning also ensures that the project emergency response program is integrated with that of the INEEL. Specific procedures for addressing emergency events and actions to be taken are further described in the facility-specific emergency implementing procedures. Finally, the HASP addresses project-specific hazards, potential emergency events, and the actions to take following such events.

10.2 Emergency Preparation and Recognition

The sections for hazards identification and mitigation and accident prevention provided the strategy that will be followed at the project site to prevent accidents. Similarly, emergency preparation and recognition also will require project personnel to be constantly alert for potentially hazardous situations and signs and symptoms of chemical exposure or releases.

MCP-2725, “Field Work at the INEEL,” requirements for training, emergency actions, and notifications will be followed for all projects conducted outside facility boundaries.

Preparation and training on emergencies will include proper site access and egress procedures in response to project events and INEEL emergencies as part of the project-specific HASP training and facility access training where applicable. Visitors also will receive this training on a graded approach based on their site access requirements. Visitor training will include, alarm identification, location and use of communication equipment, location of site emergency equipment, and evacuation.

On-scene response to and mitigation of site emergencies could require the response from both project personnel and INEEL fire department personnel. Emergencies could include the following scenarios:

- Accidents resulting in injury

- Fires
- Spills of hazardous or radiological materials
- Tornadoes, earthquakes, or other adverse natural phenomena
- Vehicle or transportation emergencies
- Safeguard and security emergencies
- Emergencies at nearby facilities that could prompt evacuation or take-cover actions at the task site.

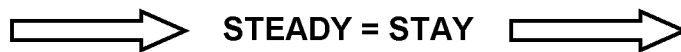
10.3 Emergency Alerting, Responses, and Sheltering

10.3.1 Alarms

Alarms and signals are used at the project site and the INEEL to notify personnel of abnormal conditions that require a specific response. Responses to these alarms are addressed in general employee training. Emergency sirens located throughout the INEEL serve as the primary means for signaling emergency TAKE COVER or EVACUATION protective actions. To signal site personnel of a project-initiated emergency event, a separate set of emergency signals has been established based on horn blasts (e.g., vehicle or air horn).

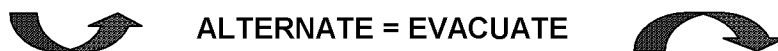
Depending on the field location, facility alarms may not be able to be heard at the project site. If the project site is outside the audible range of the facility alarms, then the notification to take cover or evacuate should be received on the field radio, mobile or cell phone, or pager. The project signals will then be used to alert personnel of the emergency actions.

10.3.1.1 Take Cover—Continuous Siren. Radiation or hazardous material releases, adverse weather conditions, or other event or emergency conditions may require that all personnel take cover indoors in the nearest building. A TAKE COVER protective action may be initiated as part of a broader response to an emergency situation and may precede an evacuation order. The order to TAKE COVER is usually announced by activating the emergency siren. The signal to take cover is a CONTINUOUS SIREN.



However, the order to take cover can also be given by word of mouth, radio, or voice paging system. When ordered to TAKE COVER, project personnel will place the site and equipment in a safe configuration (as appropriate) and then seek shelter in a project vehicle. Eating, drinking, and smoking are not permitted during take-cover conditions.

10.3.1.2 Total Area Evacuation—Alternating Siren. A total area evacuation is the complete withdrawal of personnel from the project site and the entire facility area. The evacuation signal is an ALTERNATING SIREN. When ordered to EVACUATE, project personnel will place equipment and the site in a safe configuration (as appropriate) and then proceed along the specified evacuation route to the designated assembly area or as directed by the emergency coordinator.



For total area evacuations, the facility command post is activated and all personnel will gather at the primary facility evacuation assembly area or the location designated by the emergency coordinator (EC) or Senior UXO Supervisor if outside a facility. The Senior UXO Supervisor or trained alternate will then complete the personnel accountability using the attendance log. In this situation, the project area warden will report the result of the accountability process to the facility emergency coordinator.

10.3.1.3 Local Area Evacuation—Vehicle Horn Blast. A local area evacuation is the complete withdrawal of personnel from the project site but it does not require the complete evacuation of the entire facility or INEEL area. A single long horn blast (e.g., vehicle) will serve as the project’s primary emergency evacuation signal (as listed on Table 10-1). However, the order to evacuate also can be given by word of mouth, radio, or voice paging system. When ordered to evacuate the project site, personnel will place the site in a safe condition (as appropriate) and then proceed along the specified evacuation route to the assembly area designated for local area evacuations or as directed by the Senior UXO Supervisor. Eating, drinking, and smoking are not permitted during emergency evacuations.

Table 10-1. Project internal emergency signals.

Device or Communication Method	Signal and Associated Response
Vehicle horn blasts	<p>One long blast—Emergency evacuation, evacuate project site immediately. Proceed in an upwind direction to designated assembly area as specified by the Senior UXO Supervisor.</p> <p>Two short blasts—Non-emergency evacuation of immediate work area. Proceed to designated assembly area as specified by the Senior UXO Supervisor.</p> <p>Three long blasts or verbally communicated—All clear, return to project site.</p>

10.4 Personnel Roles, Lines of Authority, and Training

10.4.1 The Idaho National Engineering and Environmental Laboratory Emergency Response Organization

The INEEL ERO structures are based on the incident command system and are described in PLN-114 and facility-specific addenda to that plan.

10.4.2 Role of Project Personnel in Emergencies

Depending on the event, a graded response and subsequent notifications will take place. Senior UXO Supervisor and project personnel responsibilities are described below. Personnel will respond to emergencies only within the limits of their training and designated by their position. Emergency response actions also will be covered as part of the HASP briefing.

It is assumed that all UXO removal sites will be located outside any facility boundary, thus qualifying as “field work” under MCP-2725, “Field Work at the INEEL.” The CFA SAD has jurisdiction over field work. If UXO removal sites are located within a different facility’s area of jurisdiction, adjustments to this section will need to be made and announced at the pre-job briefing.

10.4.2.1 Senior UXO Supervisor. The Senior UXO Supervisor (or designated alternate) is responsible for initiating all requests for emergency services (e.g., fire and medical) and for notifying the

Warning Communication Center (WCC) (as applicable) of abnormal (or potential emergency) events that occur during the project. The Senior UXO Supervisor may also serve as the area warden (or designate that responsibility to another person who has been trained as area warden) and conduct personnel accountability. Additionally, the Senior UXO Supervisor will control the scene until a higher-tiered incident command system authority arrives at the scene to take control. When relinquishing this role the Senior UXO Supervisor (or designated alternate) will provide all information about the nature of the event, potential hazards, and other information requested.

10.4.2.2 Project Personnel. Every person at the project site has a role to play during a project event or INEEL emergency. Each employee must be constantly aware of potential problems or unexpectedly hazardous situations and immediately report these situations to the Senior UXO Supervisor. All personnel are expected to watch out for their fellow workers, to report their concerns to the Senior UXO Supervisor, and to take emergency actions as described in this section. Roles and responsibilities are further detailed in Table 10-2.

Table 10-2. Responsibilities during an emergency.

Responsible Person	Action Assigned
Senior UXO Supervisor (or designee)	Signal evacuation. Report spill to appropriate spill notification personnel and take mitigative actions. Contact Warning Communications Center
Senior UXO Supervisor (or trained designee)	Serve as area warden and conduct accountability and report to WCC, shift supervisor, SAD, or Emergency Coordinator, as applicable.
Health and safety officer and medic and first-aid trained personnel	Administer first-aid to victims (voluntary basis only).

10.4.2.3 Personnel Accountability and Area Warden. Project personnel are required to evacuate the site in response to TAKE COVER, EVACUATION, and local evacuation alarms. In all cases, the Senior UXO Supervisor (or trained designee) will account for the people present on the project site. The Senior UXO Supervisor (or trained alternate) will serve as the area warden for the project and will complete the personnel accountability (following positive sweeps of the project site) based on the attendance log. The results of this accountability will then be communicated to the Senior UXO Supervisor for reporting to the WCC, shift supervisor, SAD or emergency coordinator (if the command post has been formed), as applicable.

10.4.2.4 Spills. If the material spilled is known and is small enough to be safely contained at the task site, task-site personnel will handle spill control using spill supplies at the site and immediately report the incident to the WCC. Reporting requirements will be determined by the facility emergency coordinator in accordance with MCP-190, “Event Investigation and Occurrence Reporting.” If any release of a hazardous material occurs, task site personnel will comply with the following immediate spill response actions.

10.4.2.4.1 Untrained Initial Responder—The requirements for the untrained initial responder (or if the material characteristics are unknown) are listed below:

- Place equipment in a safe configuration

- **Evacuate** and **isolate** the immediate area
- Notify and then **seek help** from and **warn** others in the area
- Notify the Senior UXO Supervisor.

10.4.2.5 Trained Responder. The requirements for the trained responder where material characteristics are known and no additional PPE is required are listed below:

- Place all equipment in a secure configuration
- **Seek help** from and **warn** others in the area
- **Stop** the spill if it can be done without risk (e.g., returning the container to the upright position, closing valve, and shutting off power)
- **Provide** pertinent information to the Senior UXO Supervisor
- **Secure** any release paths if safe to do so.

10.5 Medical Emergencies and Decontamination

Medical emergencies and responses to injuries or suspected exposures will be handled as stated in Section 8.2. Decontamination of personnel and equipment is described in Section 11.2.

10.6 Emergency Communications

In the event of an emergency, the capability to summon INEEL emergency response resources to immediately notify site personnel and inform others of site emergencies is required. Communications equipment at the task site may include a combination of radios, telephones (e.g., mobile, cellular, or facility), and pagers. Communication methods described below will be used during emergency situations.

10.6.1 Notifications

During emergency situations, the WCC will be notified of any project emergency event. The WCC will then make the required ERO notification. The following information should be communicated, as available, to the WCC:

- The caller's name, title (e.g., Senior UXO Supervisor or HSO), telephone number, and pager number
- Exact location of the emergency
- Nature of the emergency including time of occurrence, current site conditions, and special hazards in the area
- Injuries, if any, including numbers of injured, types of injuries, and conditions of injured
- Emergency response resources required (e.g., fire, hazardous material, and ambulance)
- Additional information as requested.

10.7 Emergency Facilities and Equipment

Emergency response equipment maintained at the project site includes the items listed in Table 10-3. The INEEL fire department maintains an emergency hazardous material response van that can be used to respond to an event or emergency at the project. Fire department personnel also are trained to provide immediate hazardous material spills and medical services. Additionally, the CFA-1612 medical facility is manned by medical personnel to evaluate and stabilize injured personnel or those experiencing signs and symptoms of exposure.

Table 10-3. Emergency response equipment to be maintained at the project site during operations.

Equipment Name and Quantity Required	Location at Task Site	Responsible Person	Frequency of Inspection or Verification
First-aid kit	1 in each project vehicle	HSO	Monthly: check seal only unless broken
Eyewash bottles ^a Eyewash station ^a	In or near DWA or CWA	HSO	Monthly
Hazardous materials spill kit	Project vehicle	HSO	Daily verification
Communication equipment (operational)	Onsite	Senior UXO Supervisor	Daily radio check (if radios are used)
Fire extinguishers, ABC	1 in each project vehicle, as a minimum	HSO	Monthly

a. An eyewash bottle will be used to provide an immediate eye flush if required. The location of the eyewash station will be identified by the HSO during the pre-job briefing.

10.8 Evacuation Assembly Areas and Central Facilities Area Medical Facility

Since UXO removal and detonation projects are conducted outside of a facility, the INEEL evacuation routes listed in PLN-114 will be used. Evacuation Assembly Areas will be discussed during the pre-job briefing. Figure 10-1 shows the location of the CFA Medical Facility.

10.9 Reentry, Recovery, and Site Control

All reentry and recovery activities will follow general site security and control requirements identified in Section 7 unless conducted as part of an emergency response action. All entries to the project site performed in support of emergency actions will be controlled by the on-scene commander.

10.9.1 Reentry

During an emergency response it is sometimes necessary to reenter the scene of the event. Reasons for performing a reentry may include:

- Performing personnel search and rescues
- Responding to medical first-aid needs

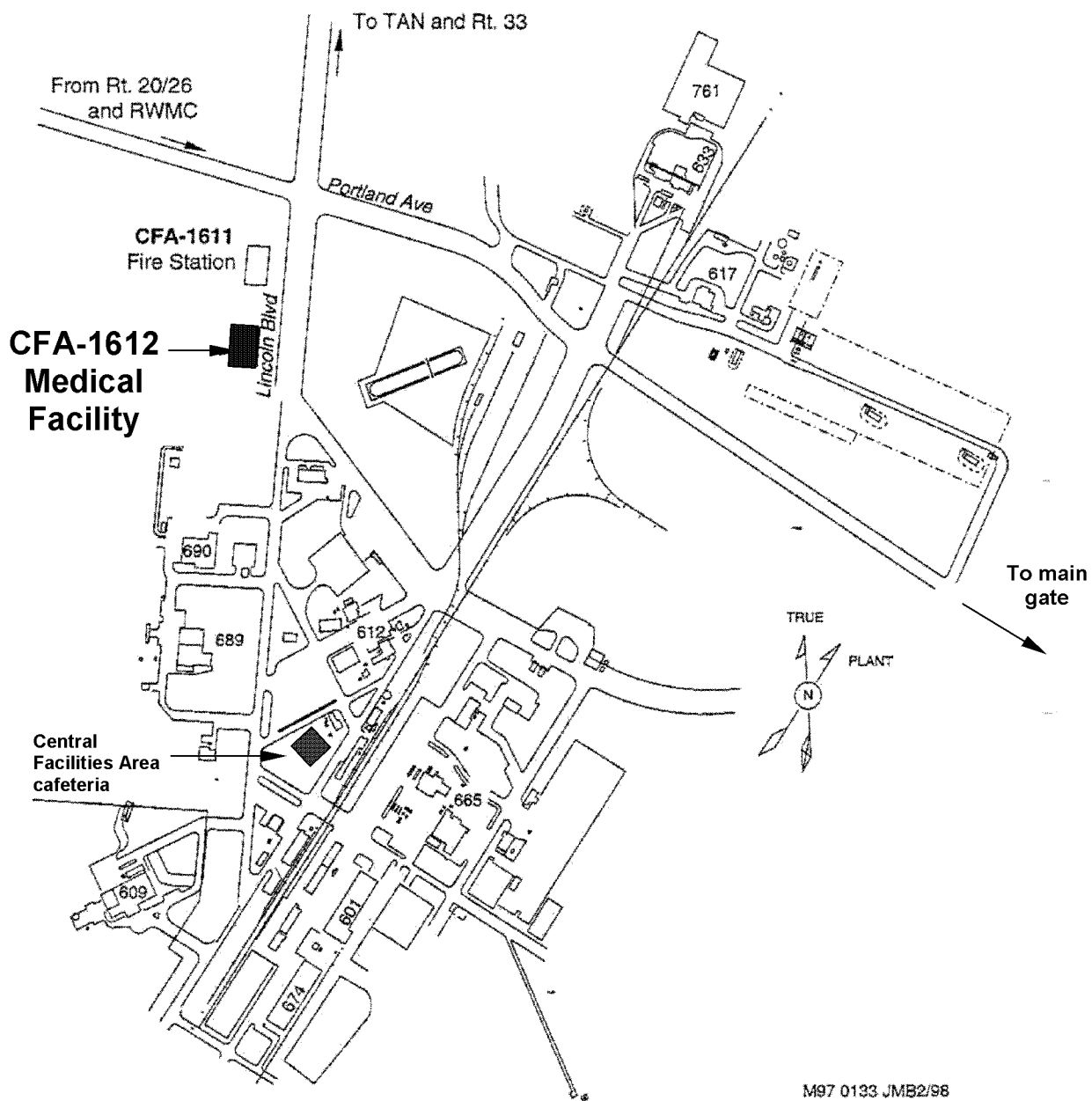


Figure 10-1. Map showing the location of the CFA medical facility (CFA-1612).

- Performing safe shutdown actions
- Performing mitigating actions
- Evaluating and preparing damage reports
- Performing radiation or hazardous material surveys.

Reentries will be carefully planned to ensure that personnel are protected from harm and to prevent initiating another emergency event. Reentry planning is undertaken as a graded approach depending on the nature of the initiating event.

10.9.2 Recovery

After the initial corrective actions have been taken and effective control established, response efforts will shift toward recovery. Recovery is the process of assessing post-event and post-emergency conditions and developing a plan for returning to pre-event and pre-emergency conditions, when possible, and following the plan to completion. The emergency coordinator and emergency action manager are responsible for determining when an emergency situation is sufficiently stable to terminate the emergency and enter the recovery phase. The project manager, with concurrence from the area SAD, will appoint the recovery manager.

10.10 Critique of Response and Follow up

A review and critique will be conducted following all emergency events, drills, and exercises at the INEEL. In some cases, an investigation may be required before commencing recovery actions. For this reason care should be exercised to preserve evidence when appropriate.

10.11 Telephone and Radio Contact Reference List

Table 10-4 lists the general points of contact for UXO projects. Because personnel listed may change frequently, working copies of this list will be generated as required to note new positions and changes of personnel assigned. This HASP should not be revised with a document action request to note these changes.

Table 10-4. Project emergency contact list.

Contact Title	Contact Name	Phone Number or Radio Net	Cellular Phone Number	Pager Number
Fire, medical emergency, and security Warning Communications Center		777 526-1515		
CFA site area director	Steven L. Winn	6-1075	520-6013	5494
Manager of projects Environmental Restoration (ER) Program WAG 10	Robert E. James	6-5020	520-4623	6791
Project manager	TBD			
Senior UXO Supervisor	Hanceford E. Clayton	6-8197	521-8404	7557
Health and safety officer	Hanceford E. Clayton	6-8197	521-8404	7557
Safety professional	Kerry D. Briar	6-5506		6627
ER WAG 10 Safety and Health Point of Contact	Kerry D. Briar	6-5506		6627
Industrial hygienist	Jonathan D. Roberts	6-5386		3351
ER Program safety, health, and quality assurance lead	Charles Chebul	6-9566	520-3059	5689
ER WAG 10 environmental compliance	Michael McGuire	6-4332		6048

11. DECONTAMINATION PROCEDURES

Radiological and chemical contamination is not expected for UXO removal and detonation projects under this HASP. However, if chemical or radiological contamination is encountered at levels requiring decontamination, this section provides guidance on how it will be performed.

11.1 Contamination Control and Prevention

Contamination control and prevention procedures will be implemented to minimize personnel contact with contaminated surfaces if such surfaces are encountered or may be contacted during project tasks.

11.2 Equipment and Personnel Decontamination

Personnel and equipment decontamination procedures are necessary to control contamination and to protect personnel should contamination be encountered. Both chemical and radionuclide contamination will be decontaminated from surfaces of a contaminated area at the exit and other designated work area boundaries.

If radionuclide decontamination operations are required for equipment or areas, they will be performed in accordance with Chapter 4 of the INEEL Radiological Control Manual. Nonradionuclide decontamination will be evaluated by the HSO and project industrial hygienist, on a case-by-case basis, to determine the most appropriate level of PPE to be worn. An RWP will be generated if radiological contamination is encountered. Specific equipment and personnel decontamination methods are provided in the following subsections.

11.2.1 Equipment Decontamination

A decontamination pad may be established if nonradionuclide decontamination is required before equipment can be released. If it is deemed necessary and appropriate by the project industrial hygienist, then a wet wiping with an amended water solution (e.g., amended with a nonphosphate detergent such as Alconox) may be conducted before it is allowed to leave the decontamination area.

11.2.2 Personnel Decontamination

Project activities will be conducted in Level D PPE unless upgrading is warranted. Engineering controls in conjunction with work controls and proper handling of samples will serve as the primary means to eliminate the need for personnel decontamination.

The modified Level D PPE selection, as identified in the RWP will provide for the layered barriers required to minimize external surface contact with potentially contaminated surfaces.

11.2.3 Decontamination in Medical Emergencies

If a person is injured or becomes ill, that person will be immediately evaluated by first-aid trained personnel (on a voluntary basis) at the project task site. If the injury or illness is serious, then the Senior UXO Supervisor will contact the WCC to summon emergency services (i.e., fire department and CFA medical services) to the project site.

Medical care for serious injury or illness will not be delayed for decontamination. In such cases, gross decontamination may be conducted by removing the injured person's outer protective clothing (if

possible) and other contaminated areas may be contained with a bag or glove. If contaminated PPE cannot be removed without causing further injury (except for the respirator, which must be removed), the individual will be wrapped in plastic, blankets, or other available material to help prevent contaminating the inside of the ambulance, medical equipment, and medical personnel.

The industrial hygienist or RCT (depending on the type of contamination) will accompany the employee to the medical facility to provide information and decontamination assistance to medical personnel. Contaminated PPE then will be removed at the CFA medical facility and carefully handled to prevent the spread of contamination.

11.3 Doffing Personal Protective Equipment and Decontamination

As stated earlier, no personnel decontamination beyond doffing of PPE is anticipated for UXO removal and detonation projects. Careful removal of the outer PPE will serve as the primary decontamination method.

The specific doffing sequence of modified Level D or C PPE, and associated decontamination procedures, will be based on the nature of the contamination. A general approach for doffing modified Level D or C PPE is described below. However, no one doffing strategy works for all circumstances. Modifications to this approach are appropriate if site conditions change or at the discretion of the project HSO in consultation with the project industrial hygienist and RCT.

11.3.1 Modified Level D Personal Protective Equipment Doffing and Decontamination (if required)

If required to be worn, modified Level D protective clothing (e.g., disposable coveralls) will be doffed following standard radiological removal techniques (rolling outside surface inward and down) and will constitute the initial decontamination step. All PPE will be placed in the appropriately labeled containers.

11.4 Site Sanitation and Waste Minimization

Site personnel will use the toilet facilities at CFA or other INEEL area facility. Potable water and soap is available in these areas for personnel to wash their hands and face upon exiting the DWA or CWA.

Waste materials will not be allowed to accumulate at routine monitoring sites. Appropriately labeled containers for industrial waste and CERCLA waste (as required) will be maintained at the project site. Personnel should make every attempt to minimize waste through the judicious use of consumable materials. All site personnel are expected to make good housekeeping a priority at the job site.

12. RECORD-KEEPING REQUIREMENTS

12.1 Industrial Hygiene and Radiological Monitoring Records

When Industrial Hygiene support is required, the industrial hygienist will record airborne monitoring and sampling data (both area and personal) collected for exposure assessments in the INEEL Hazards Assessment and Sampling System database. All monitoring and sampling equipment will be maintained and calibrated in accordance with INEEL procedures and the manufacturer specifications. Industrial hygiene airborne monitoring and sampling exposure assessment data are treated as limited access information and maintained by the industrial hygienist in accordance with INEEL Companywide Safety and Health Manual procedures.

The RCT maintains a logbook of radiological monitoring, daily project operational activities, and instrument calibrations. Radiological monitoring records are maintained in accordance with companywide *Manual 15B -Radiation Protection Procedures*.

Project personnel or their representatives have a right to the monitoring and sampling data (both area and personal) from both the industrial hygienist and the RCT. Results from monitoring data also will be communicated to all field personnel during daily POD meetings and formal prejob briefings, in accordance with MCP-3003.

12.2 Field Logbook and Site Attendance Record

Logbooks will be maintained in accordance with MCP-231, "Logbooks." The Senior UXO Supervisor will keep a record of daily site events in the field logbook and will maintain accurate records of all personnel (e.g., workers and nonworkers) who are onsite each day in a site attendance logbook. The site attendance record logbook may be the same as the field logbook, depending on the project. Personnel will only be required to sign in and out of the attendance record once each day. The Senior UXO Supervisor is responsible for maintaining the site attendance record and for ensuring that all personnel on the project site sign in (if required). Logbooks must be submitted to Administrative Records and Document Control (ARDC) within 30 days after completion of field activities.

12.3 Administrative Record and Document Control Office

The ARDC will organize and maintain data and reports generated by ER Program field activities. The ARDC maintains a supply of all controlled documents and provides a documented system for the control and release of controlled documents, reports, and records. Copies of the management plans for the ER Program, this HASP, the ER Project Management Plan (PLN-694), the quality assurance project plan, and other documents pertaining to this work are maintained in the project file.

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